

AD-A075 613

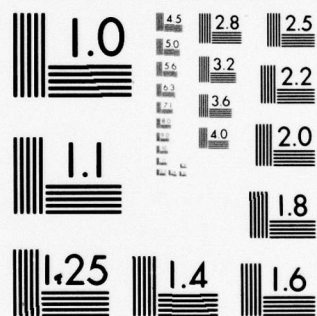
BOEING VERTOL CO PHILADELPHIA PA
CH-46 COMPOSITE ROTOR BLADE FLIGHT STRESS SURVEY DATA. VOLUME I--ETC(U)
1978 R AIELLO, J BEND
D210-11168-3-VOL-4

F/6 1/3
N00019-75-C-0396.
NL

UNCLASSIFIED

1 OF 4
ADA
075613





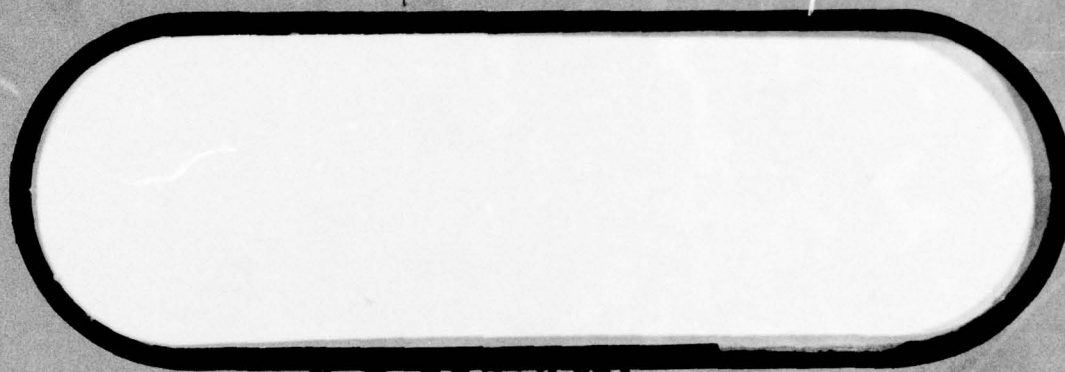
MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS-1963-A

BOEING

P

AD A075613



LEVER

A075612

DDC
RECEIVED
OCT 26 1979
E

DDC FILE COPY

This document has been approved
for public release and sale; its
distribution is unlimited.

79 10 25 045

P

REV LTR

BOEING VERTOL COMPANY

A DIVISION OF THE BOEING COMPANY

P.O. BOX 16858

PHILADELPHIA, PENNSYLVANIA 19142

DDC
RECEIVED
OCT 26 1979
E

(14) CODE IDENT. NO. 77272
(6) NUMBER D210-11168-3-Volume 4 of 13
Vol-4

TITLE CH-46 COMPOSITE ROTOR BLADE FLIGHT STRESS
SURVEY DATA, PLOTTED AFT ROTOR BLADE ANGLES,
Volume IV. AND FLAP LOADS.

ORIGINAL RELEASE DATE _____. FOR THE RELEASE DATE OF
SUBSEQUENT REVISIONS, SEE THE REVISION SHEET. FOR LIMITATIONS
IMPOSED ON THE DISTRIBUTION AND USE OF INFORMATION CONTAINED
IN THIS DOCUMENT, SEE THE LIMITATIONS SHEET.

MODEL CH-46 CONTRACT N00019-75-C-0396

ISSUE NO. _____ ISSUED TO: (15)

(10) R./Aiello
J./Bendo (11) 1978 (12) 333

PREPARED BY R.A. J Bendo DATE 11/22/78
APPROVED BY R. Aiello / J. Bendo DATE 1-26-79
K. Luna
APPROVED BY Manhush D. Hardy DATE 12-4-78
L. Marchinski / D. Hardy
APPROVED BY K. White / W. Weller DATE 2-23-79

This document has been approved
for public release and sale; its
distribution is unlimited.

403 682 LB

LIMITATIONS

Accession For	
NTIS GRA&I	
DDC TAB	
Unannounced	
Justification <i>for</i>	
<i>its on file</i>	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or special
<i>A</i>	

This document is controlled by STRESS UNIT - 7483

All revisions to this document shall be approved by the
above noted organization prior to release.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL

ACTIVE SHEET RECORD

SHEET NUMBER	REV LTR	ADDED SHEETS				SHEET NUMBER	REV LTR	ADDED SHEETS			
		SHEET NUMBER	REV LTR	SHEET NUMBER	REV LTR			SHEET NUMBER	REV LTR	SHEET NUMBER	REV LTR
1				31				61			
2				32				62			
3				33				63			
4				34				64			
5				35				65			
6				36				66			
7				37				67			
8				38				68			
9				39				69			
10				40				70			
11				41				71			
12				42				72			
13				43				73			
14				44				74			
15				45				75			
16				46				76			
17				47				77			
18				48				78			
19				49				79			
20				50				80			
21				51				81			
22				52				82			
23				53				83			
24				54				84			
25				55				85			
26				56				86			
27				57				87			
28				58				88			
29				59				89			
30				60				90			

ACTIVE SHEET RECORD

SHEET NUMBER	REV LTR	ADDED SHEETS				SHEET NUMBER	REV LTR	ADDED SHEETS			
		SHEET NUMBER	REV LTR	SHEET NUMBER	REV LTR			SHEET NUMBER	REV LTR	SHEET NUMBER	REV LTR
91				121				151			
92				122				152			
93				123				153			
94				124				154			
95				125				155			
96				126				156			
97				127				157			
98				128				158			
99				129				159			
100				130				160			
101				131				161			
102				132				162			
103				133				163			
104				134				164			
105				135				165			
106				136				166			
107				137				167			
108				138				168			
109				139				169			
110				140				170			
111				141				171			
112				142				172			
113				143				173			
114				144				174			
115				145				175			
116				146				176			
117				147				177			
118				148				178			
119				149				179			
120				150				180			

ACTIVE SHEET RECORD											
SHEET NUMBER	REV LTR	ADDED SHEETS				SHEET NUMBER	REV LTR	ADDED SHEETS			
		SHEET NUMBER	REV LTR	SHEET NUMBER	REV LTR			SHEET NUMBER	REV LTR	SHEET NUMBER	REV LTR
181				211				241			
182				212				242			
183				213				243			
184				214				244			
185				215				245			
186				216				246			
187				217				247			
188				218				248			
189				219				249			
190				220				250			
191				221				251			
192				222				252			
193				223				253			
194				224				254			
195				225				255			
196				226				256			
197				227				257			
198				228				258			
199				229				259			
200				230				260			
201				231				261			
202				232				262			
203				233				263			
204				234				264			
205				235				265			
206				236				266			
207				237				267			
208				238				268			
209				239				269			
210				240				270			

ACTIVE SHEET RECORD											
SHEET NUMBER	REV LTR	ADDED SHEETS				SHEET NUMBER	REV LTR	ADDED SHEETS			
		SHEET NUMBER	REV LTR	SHEET NUMBER	REV LTR			SHEET NUMBER	REV LTR	SHEET NUMBER	REV LTR
271				301				331			
272				302				332			
273				303				333			
274				304							
275				305							
276				306							
277				307							
278				308							
279				309							
280				310							
281				311							
282				312							
283				313							
284				314							
285				315							
286				316							
287				317							
288				318							
289				319							
290				320							
291				321							
292				322							
293				323							
294				324							
295				325							
296				326							
297				327							
298				328							
299				329							
300				330							

THE **BOEING** COMPANY

PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/28/78

D210-11168-3
NUMBER Vol. 4
REV LTR
MODEL NO.

ABSTRACT

This report volume presents plotted aft rotor blade angles and flap loads measured during the CH-46 Composite Rotor Blade Flight Stress Survey.

KEYWORDS

CH-46E
Composite
Rotor Blade
Flight Stress Survey
Alternating and Steady Loads

TABLE OF CONTENTS

	<u>Page No.</u>
REFERENCES	11
1. INTRODUCTION	12
2. SUMMARY	13
3. DATA PRESENTATION	14
3.1 Gage Identification and Index	15
3.2 Sign Convention	16
3.3 Plot Format	17
4. PLOTTED DATA	20
4.1 Aft Blade Flap Angle	21
GW = 20800 lbs., C.G. = 22.4" Fwd	22
GW = 20800 lbs., C.G. = 9.7" Aft	31
GW = 24300 lbs., C.G. = 13.2" Fwd	40
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	47
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	54
4.2 Aft Blade Lead Lag Angle	55
GW = 20800 lbs., C.G. = 22.4" Fwd	56
GW = 20800 lbs., C.G. = 9.7" Aft	65
GW = 24300 lbs., C.G. = 13.2" Fwd	74
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	81
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	88
4.3 Aft Blade Pitch Angle	89
GW = 20800 lbs., G.G. = 22.4" Fwd	90
GW = 20800 lbs., C.G. = 9.7" Aft	92
GW = 24300 lbs., C.G. = 13.2" Fwd	101
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	108
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	115
4.4 Aft Blade Extension Link Flap Bending	116
GW = 20800 lbs., C.G. = 22.4" Fwd	117
GW = 20800 lbs., C.G. = 9.7" Aft	127
GW = 24300 lbs., C.G. = 13.2" Fwd	138
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	145
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	152

TABLE OF CONTENTS

(CONTINUED)

	<u>Page No.</u>
4.5 Aft Blade Flap Bending Station 50.	153
GW = 20800 lbs., C.G. = 22.4" Fwd	154
GW = 20800 lbs., C.G. = 9.7" Aft	163
GW = 24300 lbs., C.G. = 13.2" Fwd	174
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	181
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	188
4.6 Aft Blade Flap Bending Station 88.	190
GW = 20800 lbs., C.G. = 22.4" Fwd	191
GW = 20800 lbs., C.G. = 9.7" Aft	200
GW = 24300 lbs., C.G. = 13.2" Fwd	209
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	216
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	223
4.7 Aft Blade Flap Bending Station 136.	224
GW = 20800 lbs., C.G. = 22.4" Fwd	225
GW = 20800 lbs., C.G. = 9.7" Aft	235
GW = 24300 lbs., C.G. = 13.2" Fwd	251
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	258
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	265
4.8 Aft Blade Flap Bending Station 240.	266
GW = 20800 lbs., C.G. = 22.4" Fwd	267
GW = 20800 lbs., C.G. = 9.7" Aft	276
GW = 24300 lbs., C.G. = 13.2" Fwd	285
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	292
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	299
4.9 Aft Blade Flap Bending Station 275.	300
GW = 20800 lbs., C.G. = 22.4" Fwd	301
GW = 20800 lbs., C.G. = 9.7" Aft	310
GW = 24300 lbs., C.G. = 13.2" Fwd	319
GW = 24300 lbs., C.G. = Aft (4.4" Fwd)	326
GW = 24300 lbs., C.G. = 1.5" Aft (Ext. Cargo)	333

THE **BOEING** COMPANY

PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/29/78

D210-11168-3
NUMBER Vol. 4
REV LTR
MODEL NO.

REFERENCES

1. Vertol Report D210-11168-1 "CH-46 Composite Rotor Blade Flight Test Qualification Test Plan" March 30, 1977
2. Vertol Report D210-11168-2 "CH-46 Composite Rotor Blade Flight Test Report" May 15, 1978
3. Boeing Vertol Report D210-11168-3 Volume 1 of 13, CH-46 Composite Rotor Blade Flight Stress Survey Data
4. Boeing Vertol Report D210-11168-3 Volume 10 of 13, CH-46 Composite Rotor Blade Flight Stress Survey Data, Tabulated Aft Blade Angles and Loads

THE **BOEING** COMPANY

PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/29/78

D210-11168-3
NUMBER Vol. 4
REV LTR
MODEL NO.

1. INTRODUCTION

A flight stress survey was conducted on a CH-46 helicopter with A02R1702 composite rotor blades. The test was conducted in accordance with Paragraphs 4.3.2 and 4.7 of Reference 1. General test description and pilot comments are included in Reference 2.

The tests were conducted at the Boeing Vertol Flight Test Facility at Ridley Township, Pennsylvania, during the period of June 1977 through November 1977.

THE **BOEING** COMPANY

PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/29/78

D210-11168-3
NUMBER Vol. 4
REV LTR
MODEL NO.

2. SUMMARY

A flight stress survey and structural demonstration was conducted on the #1 CH-46E Helicopter, BuNo. 153372 (S/N 2268).

The components under test were the A02R1702 composite rotor blades and the A02R1710 blade socket.

↙ This volume contains measured steady and alternating aft rotor blade angles and flap loads plotted versus true airspeed. The same data is tabulated in Volume 10. ↗

3. DATA PRESENTATION

This report contains measured steady and alternating aft blade angles and flap loads. The data is presented as plots versus true airspeed. The steady and alternating values are plotted separately and appear together as two plots per page for various level flight and maneuver conditions. The angles and load levels shown represent the maximum alternating angle or load cycle occurring during the particular flight condition. This same data is tabulated in Volume 10.

Detailed flight condition parameters and a complete tabulated summary of maneuvers for each flight can be found in Volume 1 of this report.

3.1 Gage Identification and Index

Data plot indexing, strain gage identification and instrumentation code information for data presented in this volume are as follows:

<u>DATA CODE</u>		<u>MEASUREMENT</u>		<u>DATA PLOT PAGE #</u>
<u>ACTIVE</u>	<u>SPARE</u>	<u>NAME</u>	<u>UNITS</u>	
39010	-	Aft Blade Flap Angle	(DEG.)	21
39020	-	Aft Blade Lead Lag Angle	(DEG.)	55
39030	-	Aft Blade Pitch Angle	(DEG.)	89
49150	69150	Aft Blade Extension Link Flap Bending	(IN-LB)	116
49710	69710	Aft Blade Flap Bending Sta. 50.	(IN-LB)	153
49720	69720	Aft Blade Flap Bending Sta. 88.	(IN-LB)	190
49730	69730	Aft Blade Flap Bending Sta. 136.	(IN-LB)	224
49740	69740	Aft Blade Flap Bending Sta. 240.	(IN-LB)	266
49750	69750	Aft Blade Flap Bending Sta. 275.	(IN-LB)	300

- NOTES:
1. A complete description of the instrumentation for this stress survey can be found in Volume 1.
 2. A flight by flight summary of operative gages can be found in Reference 2.
 3. The spare gages were utilized when the active gages proved inoperable.

3.2 Sign Convention

The following table summarizes the sign convention adhered to for the gages presented in this volume.

<u>GAGE MEASUREMENT NAME</u>	<u>(+) POLARITY CONDITION</u>
Aft Blade Flap Angle	Blade Up
Aft Blade Lead Lag Angle	Blade Lagging
Aft Blade Pitch Angle	L.E. Up
Aft Blade Extension Link Flap Bending	Blade Up
Aft Blade Flap Bending Sta. 50.	Blade Up
Aft Blade Flap Bending Sta. 88.	Blade Up
Aft Blade Flap Bending Sta. 136.	Blade Up
Aft Blade Flap Bending Sta. 240.	Blade Up
Aft Blade Flap Bending Sta. 275.	Blade Up

THE **BOEING** COMPANY

PREPARED BY: J. Bendo

CHECKED BY:

DATE: 9/5/78

D210-11168-3
NUMBER Vol. 4
REV LTR
MODEL NO.

3.3 Plot Format

The data plots have been grouped by common flight conditions and maneuvers and are presented in the order outlined by the data plot format table included on the next page.

For identification of data plots the plot code number in the right hand column of the table is printed on each corresponding plot chart.

Please note that many symbols are used more than once.

THE **BOEING** COMPANY

PREPARED BY: J. Bendo
 CHECKED BY:
 DATE: 9/5/78

D210-11163-3
 NUMBER Vol. 4
 REV LTR
 MODEL NO.

PLOT FORMAT

GROSS WEIGHT LBS.	C.G. IN.	HD FT.	RPM	CONDITION	PLOT CODE NO.
20800 ↓	22.4"Fwd ↓	2000	264	Level Flt.	- 1
		14000		Level Flt.	- 2
		All		Pullups(PWR ON&OFF), P.P.D. Rec.	-11
		↓		Turns (PWR ON&OFF)	-15
	9.7"Aft: ↓	↓	↓	Control Rev.'s (PWR ON)	-19
		↓		Control Rev.'s (PWR OFF), Flares	-23
		↓		P.P.D.'s, Autorotation	-27
		2000		Level Flt.	- 3
		6000		Level Flt.	- 4
		14000		Level Flt.	- 5
		6000	248	Level Flt.	-10
		All	264	Pullups(PWR ON&OFF), P.P.D. Rec.	-12
		↓	↓	Turns (PWR ON&OFF)	-16
		↓		Control Rev.'s (PWR ON)	-20
		↓		Control Rev.'s(PWR OFF), Spiral Desc., Flares	-24
		↓		P.P.D.'s Autorotation	-28
24300 ↓	13.2"Fwd ↓	2000	↓	Level Flt.	- 6
		8000		Level Flt.	- 7
		All		Pullups(PWR ON&OFF)	-13
	↓	↓	↓	Turns (PWR ON&OFF)	-17
		↓		Control Rev.'s (PWR ON)	-21
		↓		Spiral Descent, Flares	-25
		↓		P.P.D.'s, P.P.D. Rec., Autorotation	-29

CONTINUED ON NEXT PAGE

THE **BOEING** COMPANY

PREPARED BY: J. Bendo
 CHECKED BY:
 DATE: 9/5/78

D210-11168-3
 NUMBER Vol. 4
 REV LTR
 MODEL NO.

Plot Format (Continued)

GROSS WEIGHT LBS.	C.G. IN.	HD FT.	RPM	CONDITION	PLOT CODE NO.
24300 ↓	4.4"Fwd ↓	2000	264 ↓	Level Flt.	- 8
		8000		Level Flt.	- 9
		All ↓		Pullups (PWR ON&OFF)	-14
				Turns (PWR ON&OFF)	-18
				Control Rev.'s (PWR ON)	-22
				Spiral Descent, Flares	-26
				P.P.D.'s, Autorotation	-30
	1.5"Aft	2000		Level Flight (External Cargo)	-35

THE **BOEING** COMPANY

PREPARED BY: J. Bendo
CHECKED BY:
DATE: 9/5/78

D210-11168-3
NUMBER Vol. 4
REV LTR
MODEL NO.

4. PLOTTED DATA

THE **BOEING** COMPANY

PREPARED BY: J. Bendo

CHECKED BY:

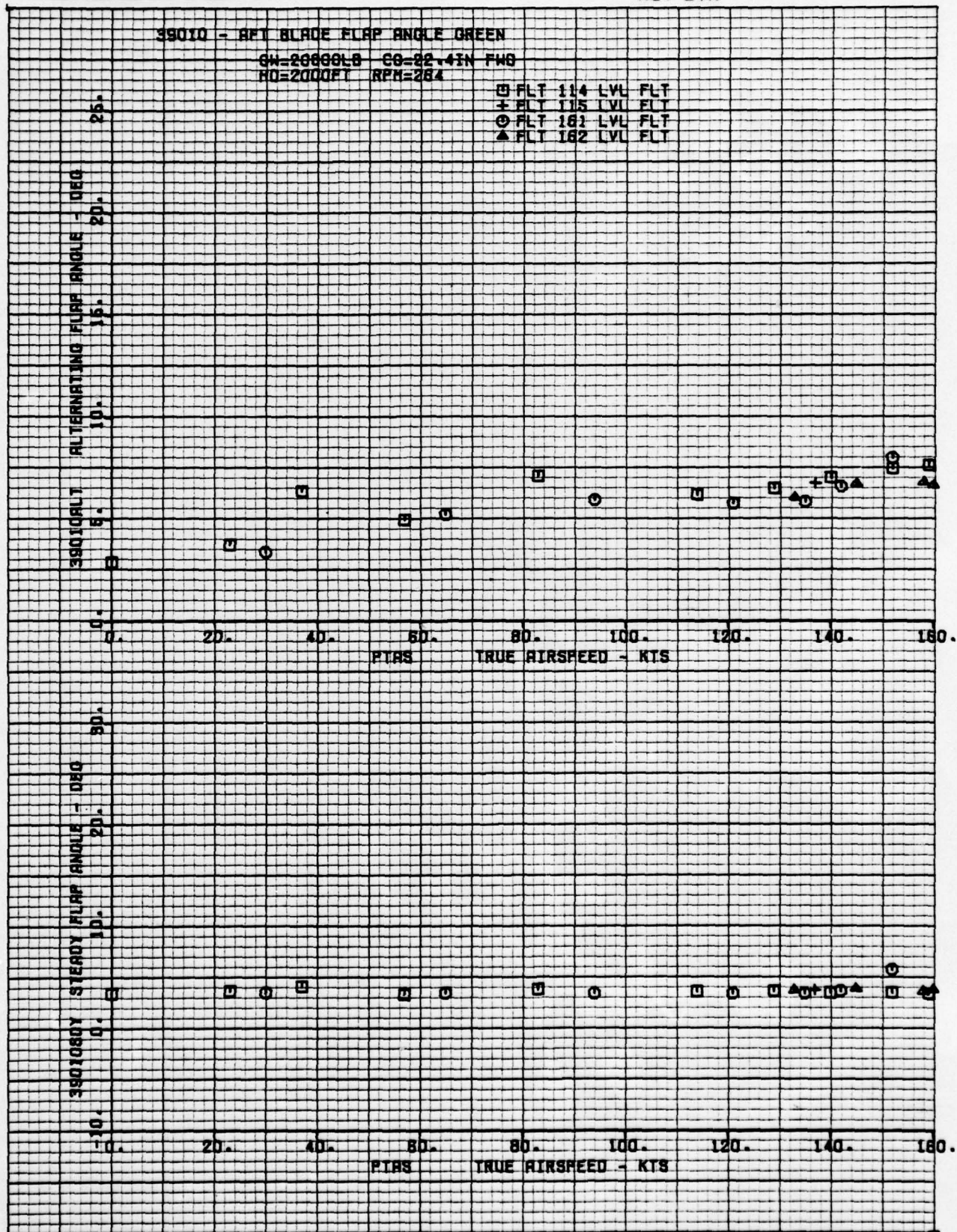
DATE: 8/28/78

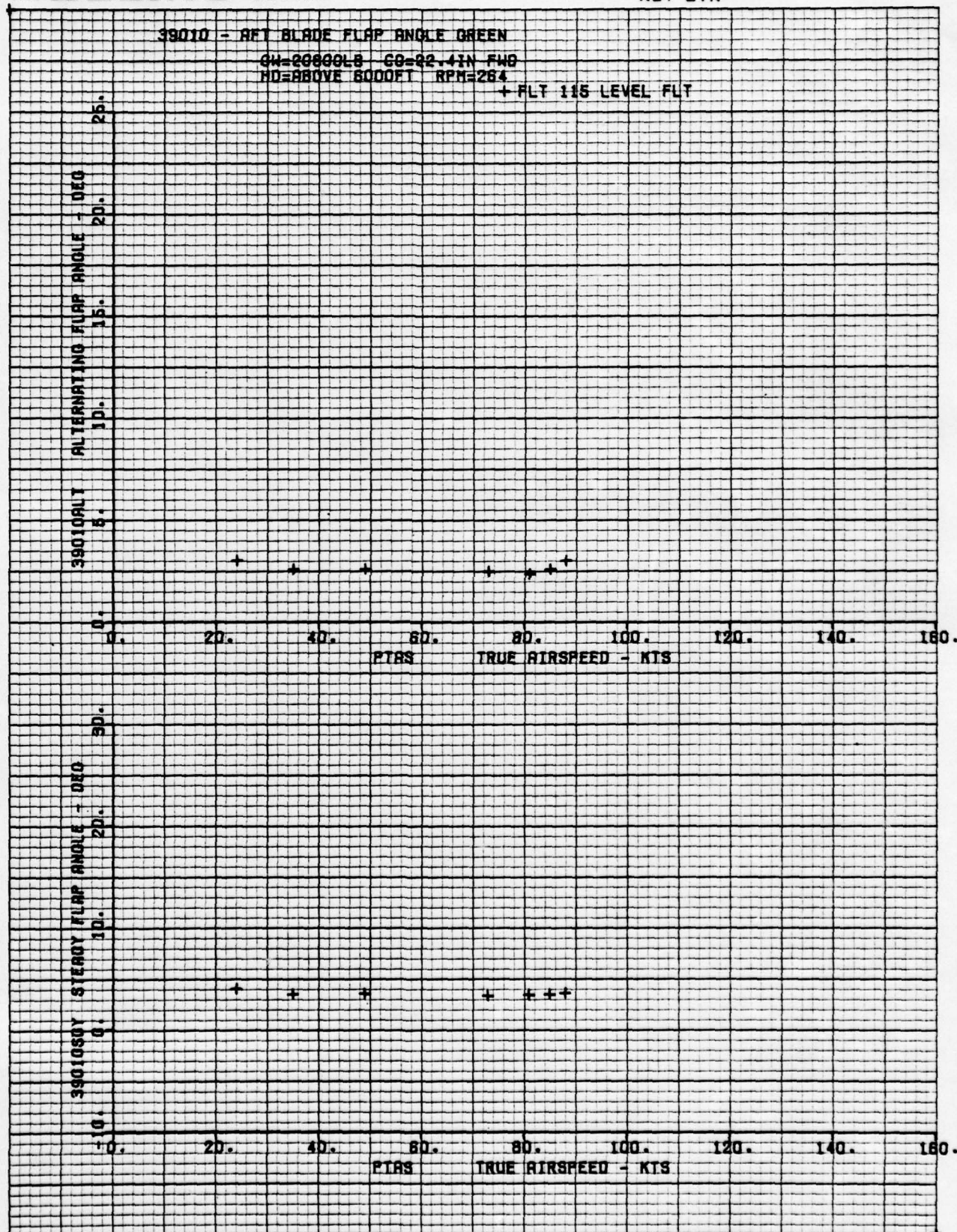
NUMBER D210-11168-3

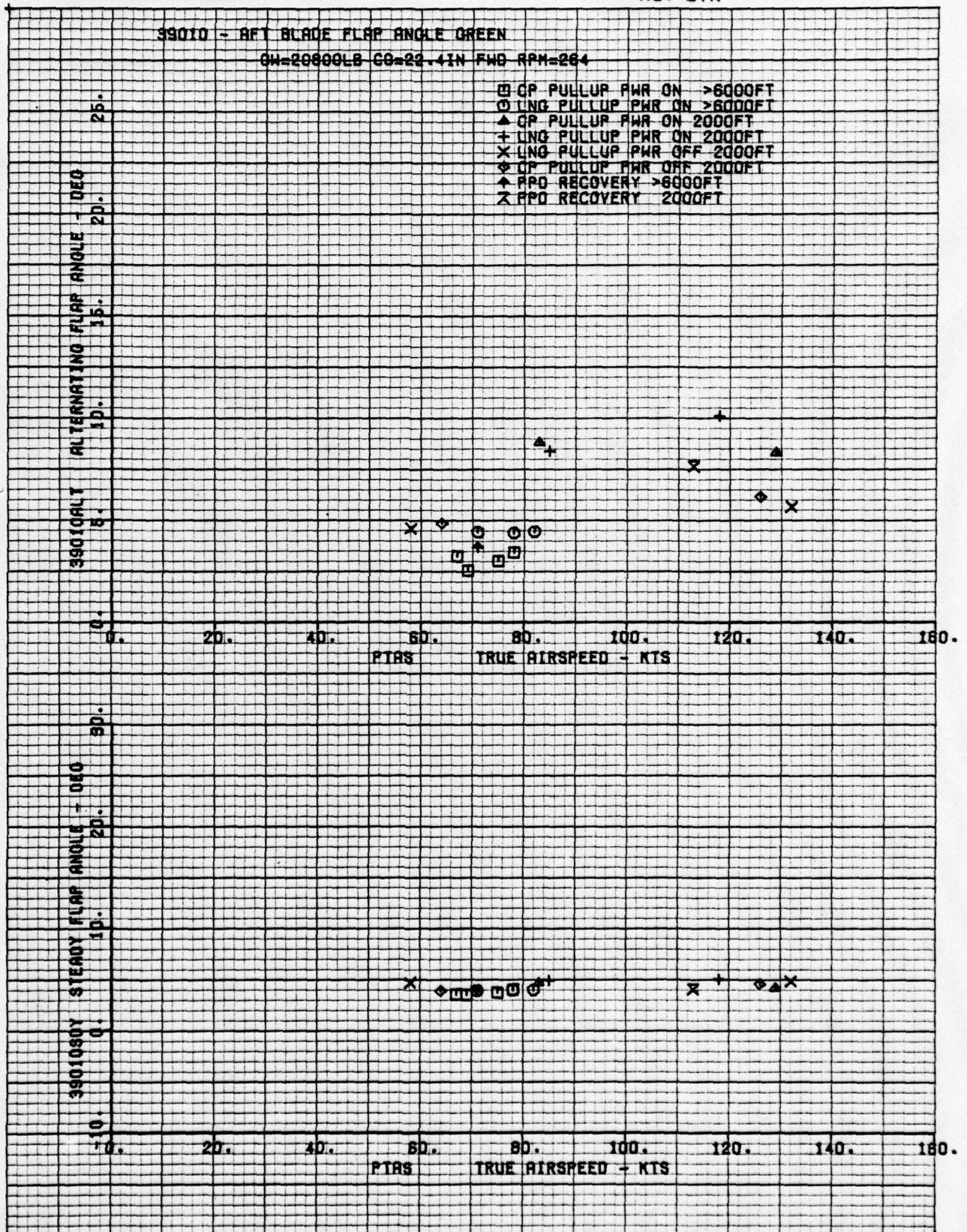
REV LTR Volume 4

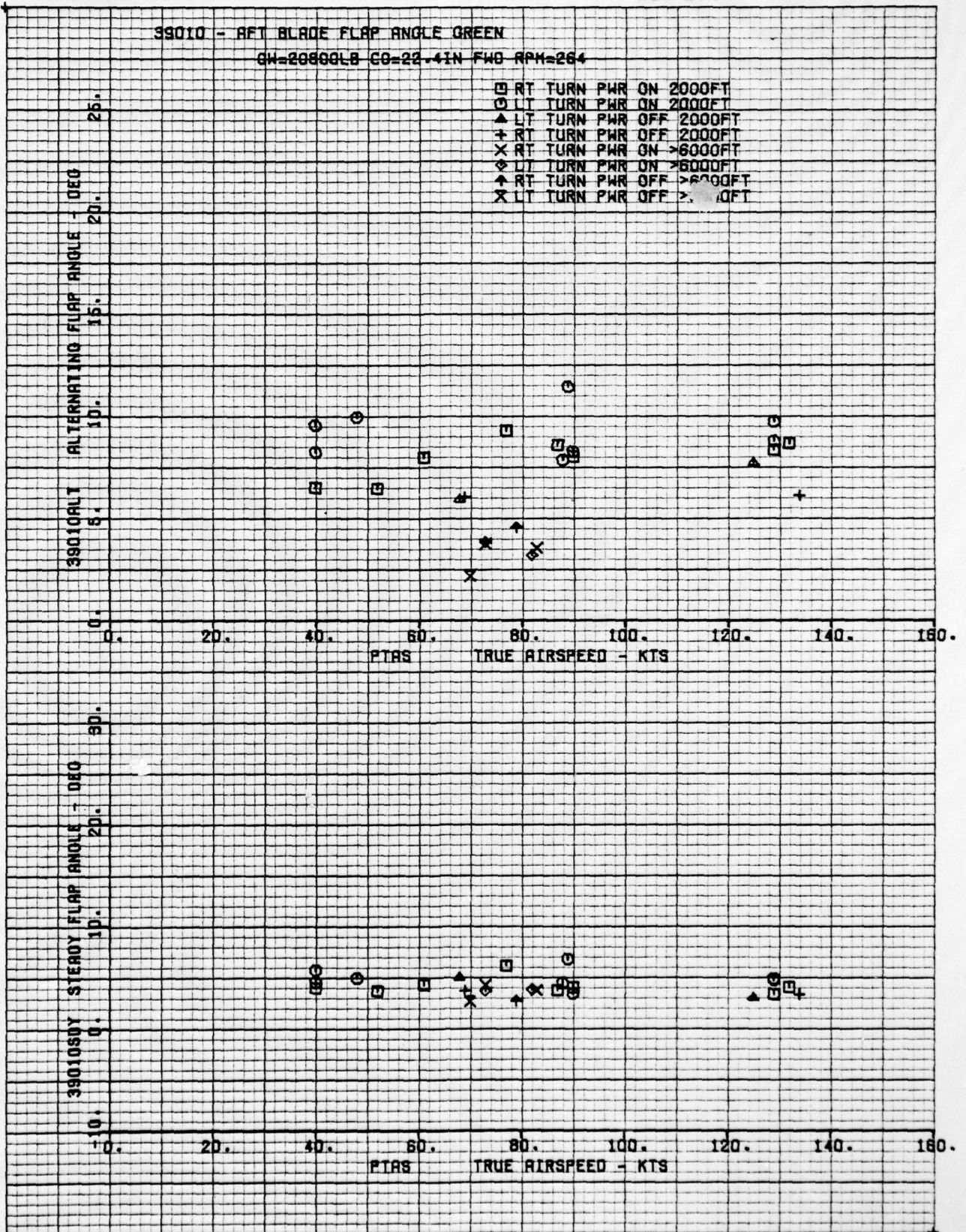
MODEL NO.

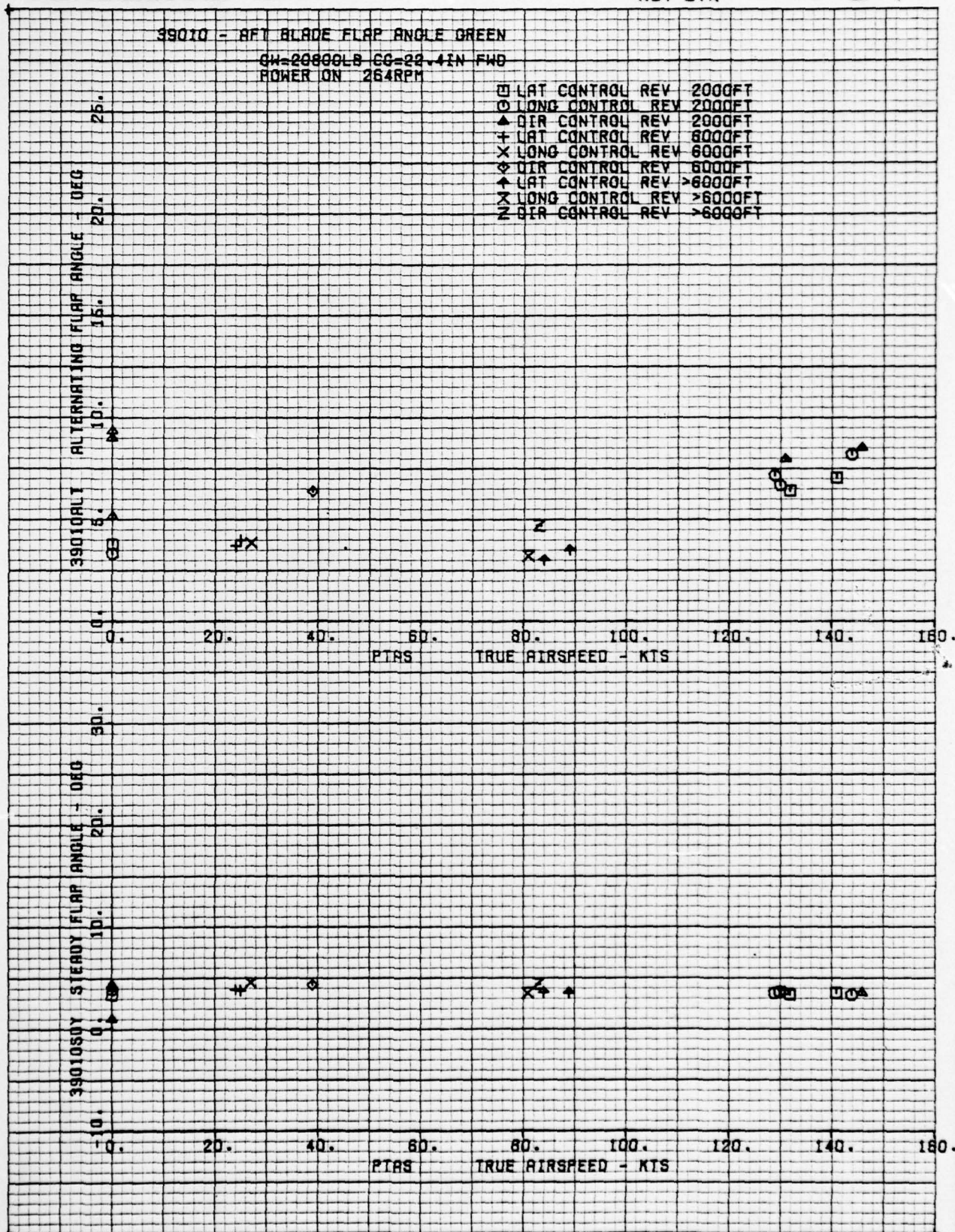
4.1 Aft Blade Flap Angle

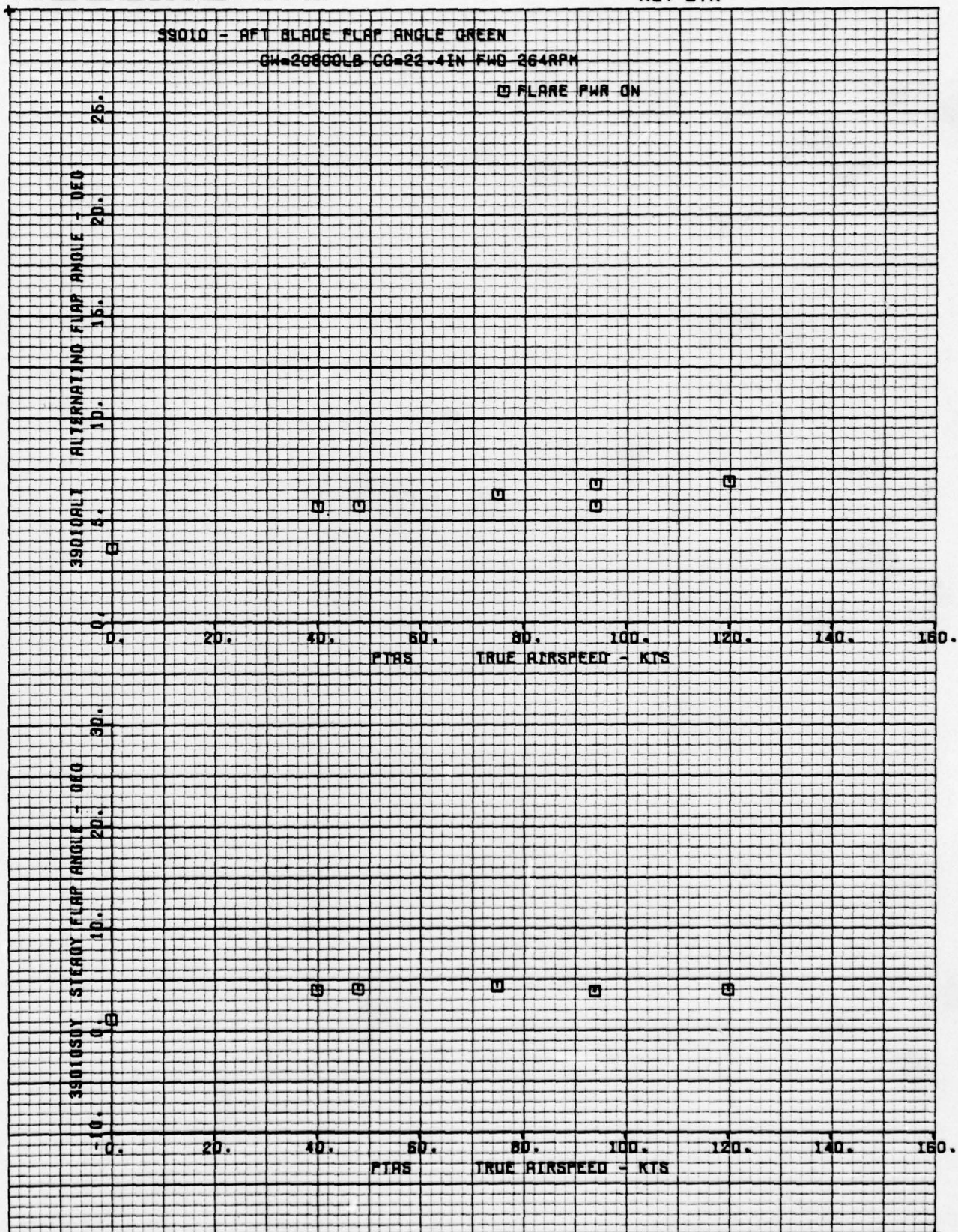












39010 - AFT BLADE FLAP ANGLE GREEN

GW=20800LB CG=23.4IN FWD
POWER OFF 264RPM

39010SDY STEADY FLAP ANGLE - DEG

39010ALT ALTERNATING FLAP ANGLE - DEG

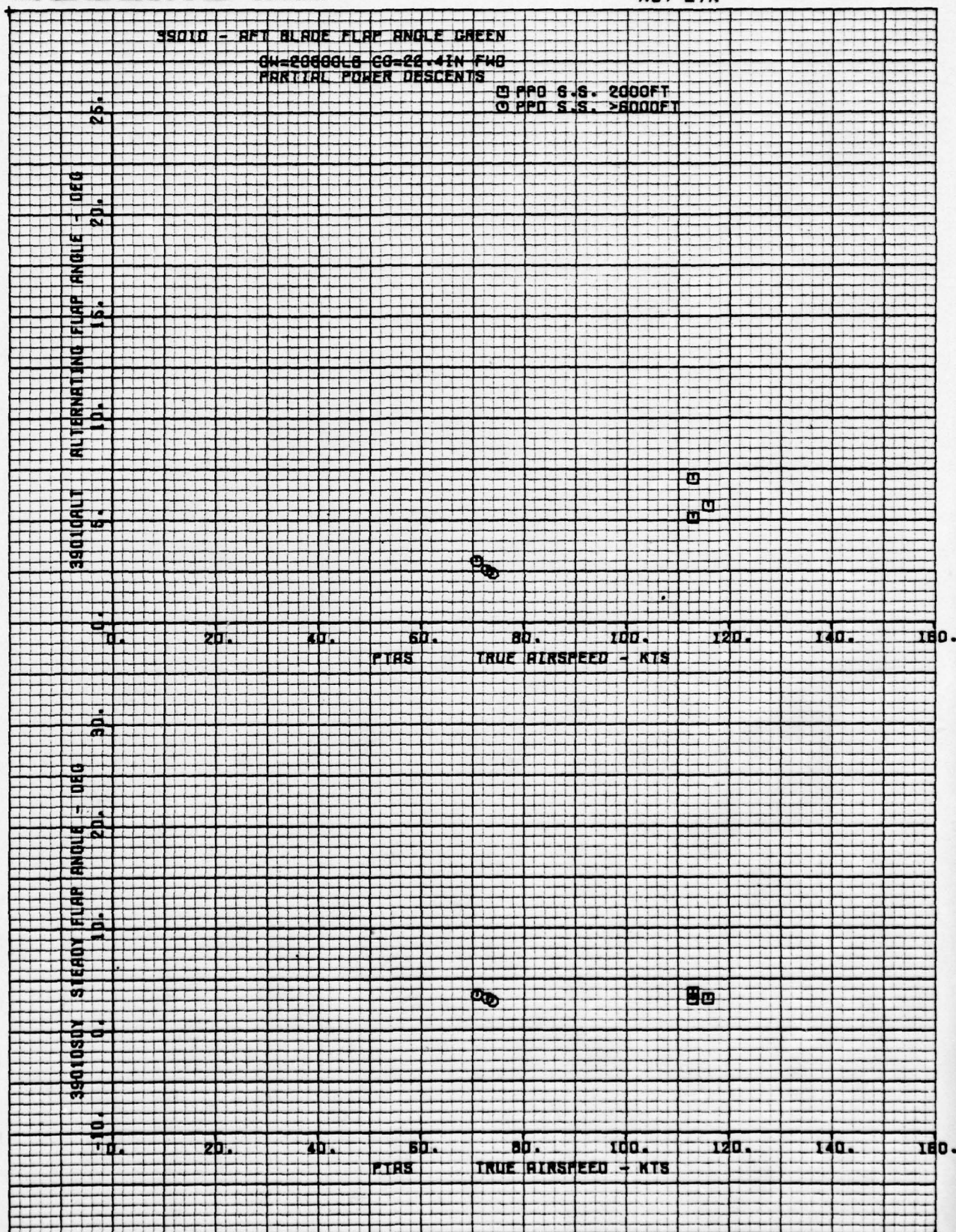
PTAS TRUE AIRSPEED - KTS

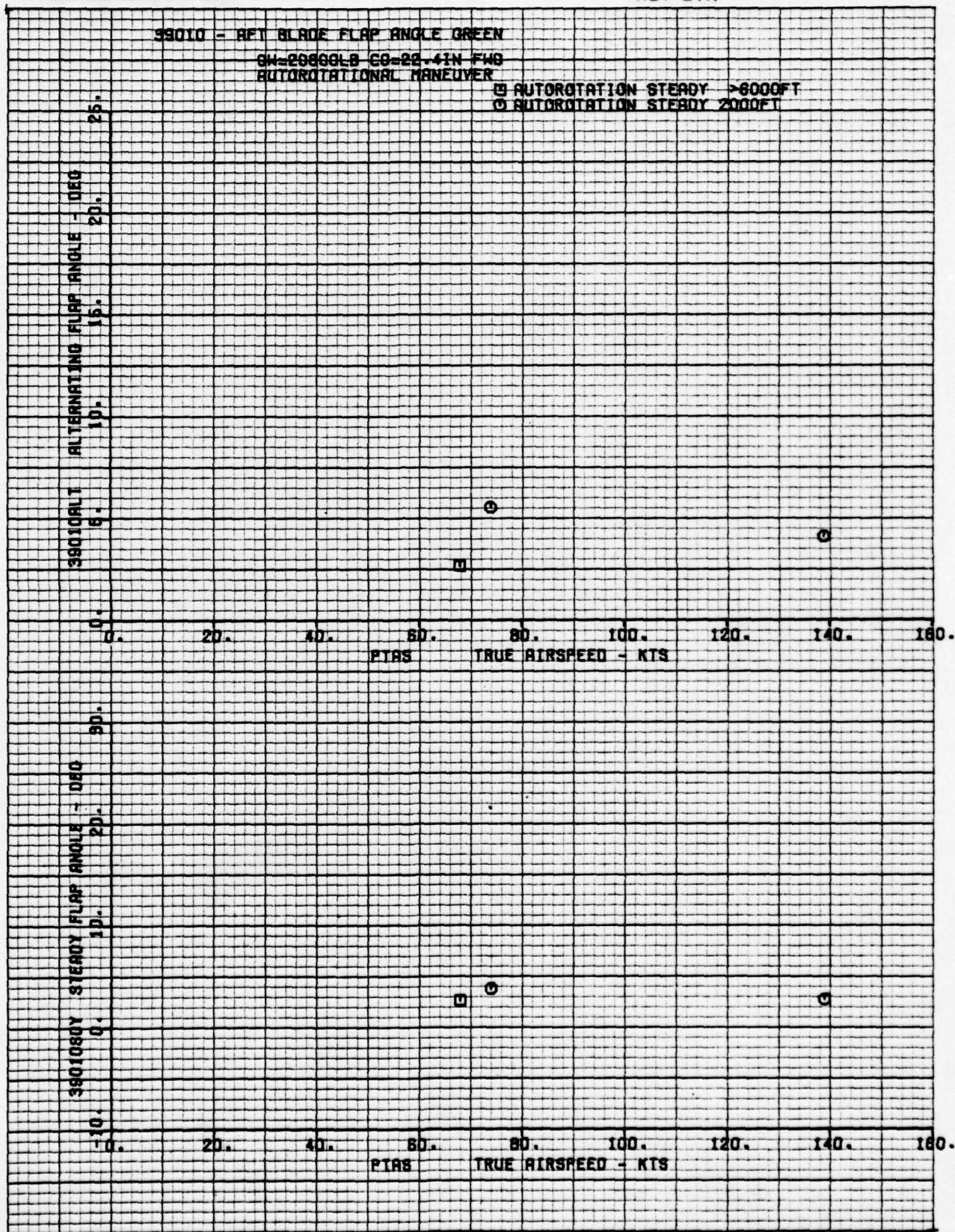
PTAS TRUE AIRSPEED - KTS

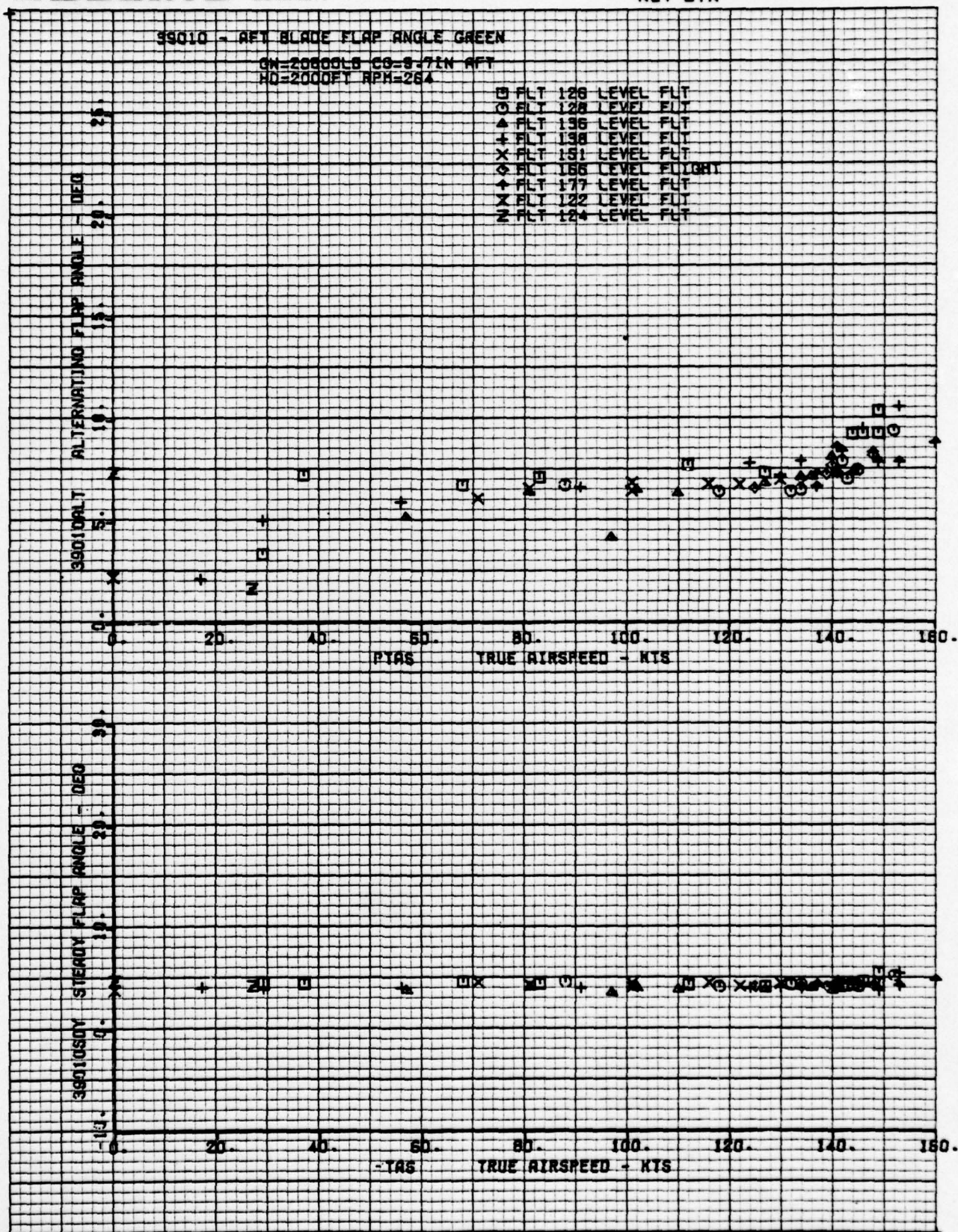
□ LAT CONTROL REV 2000FT
○ LONG CONTROL REV 2000FT
▲ DIR CONTROL REV 2000FT
✚ LAT CONTROL REV >6000FT
✕ LONG CONTROL REV >6000FT
Z DIR CONTROL REV >6000FT

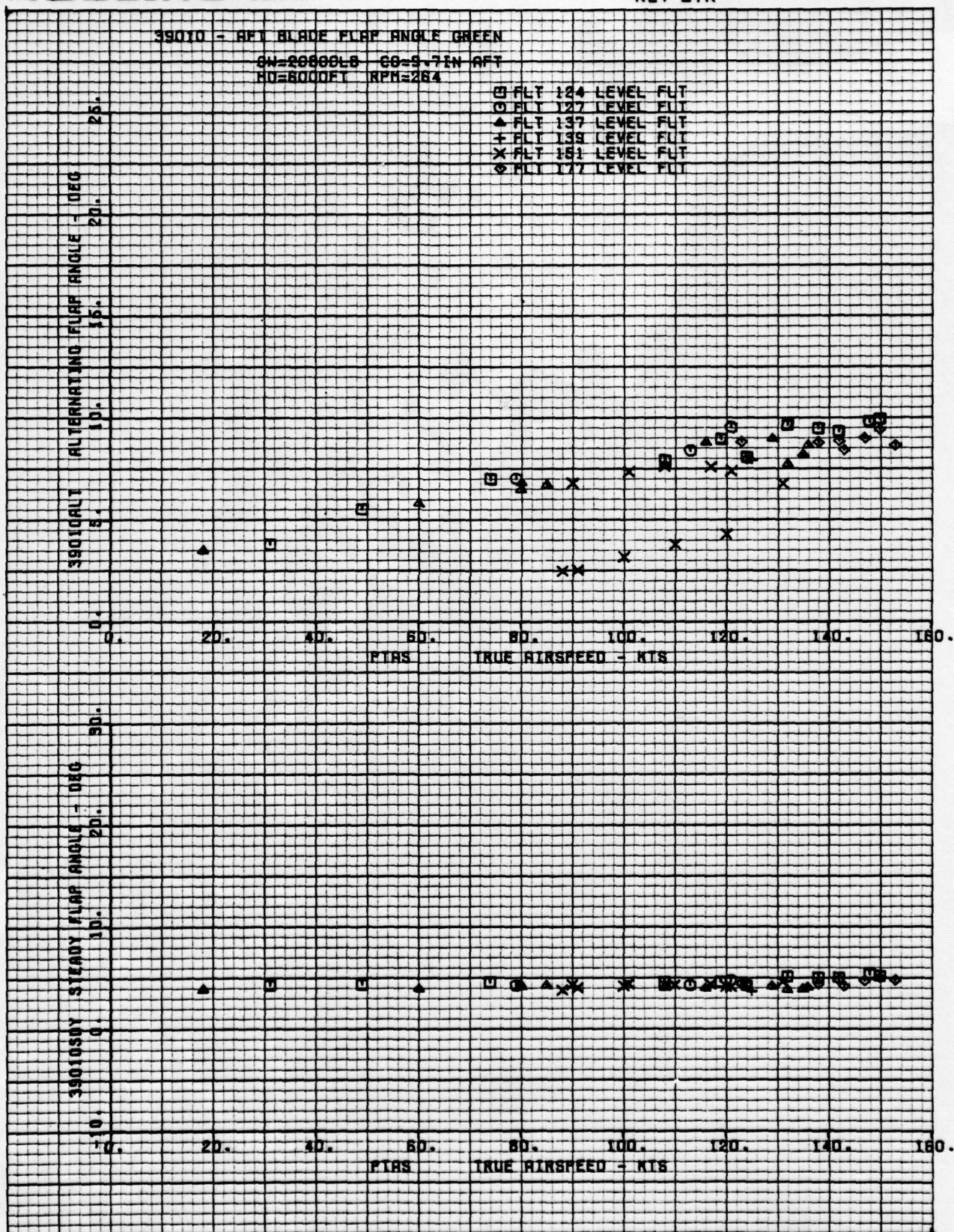
THE **BOEING** COMPANY

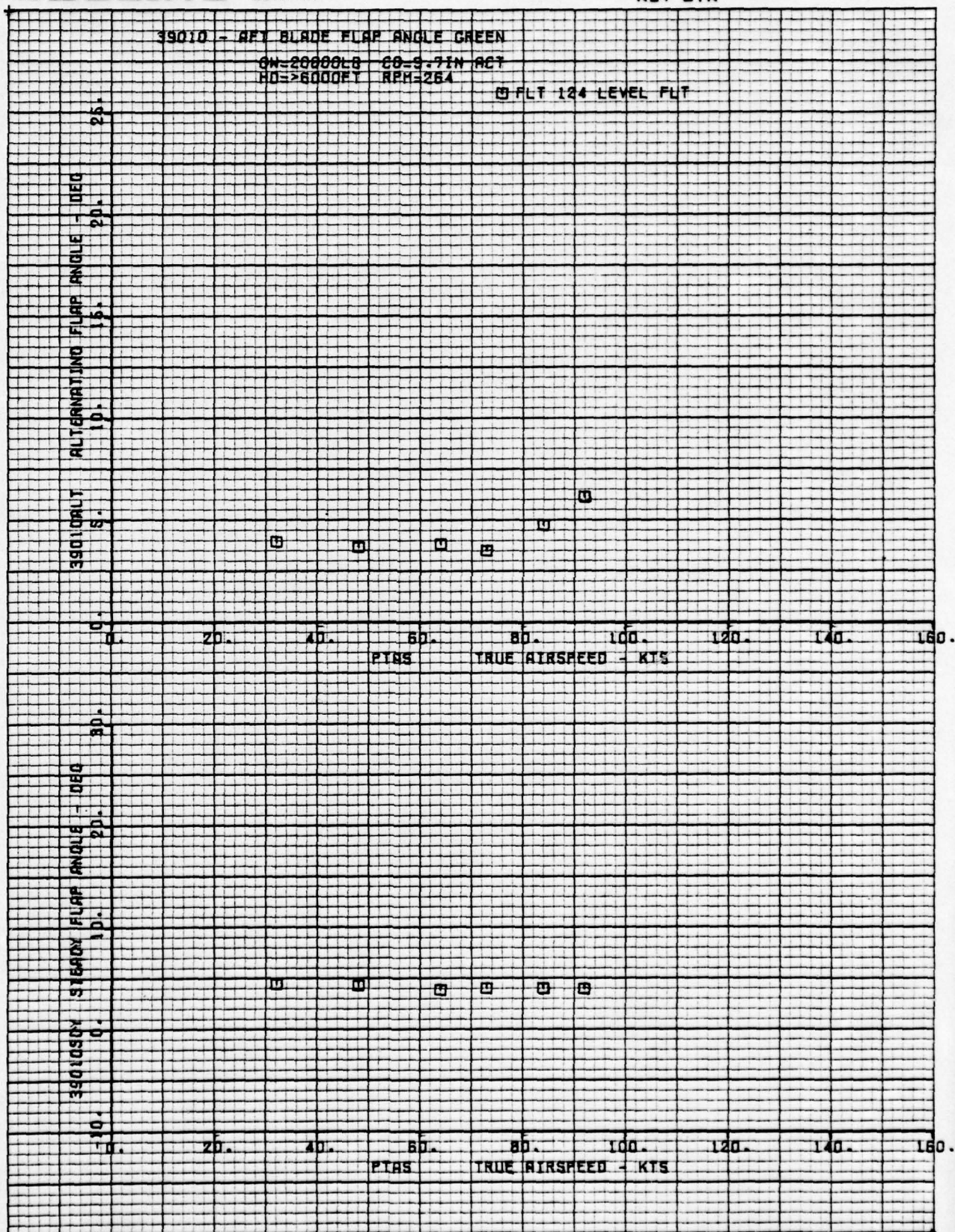
NUMBER **D210-11168-3**
REV LTR **VOLUME 4**







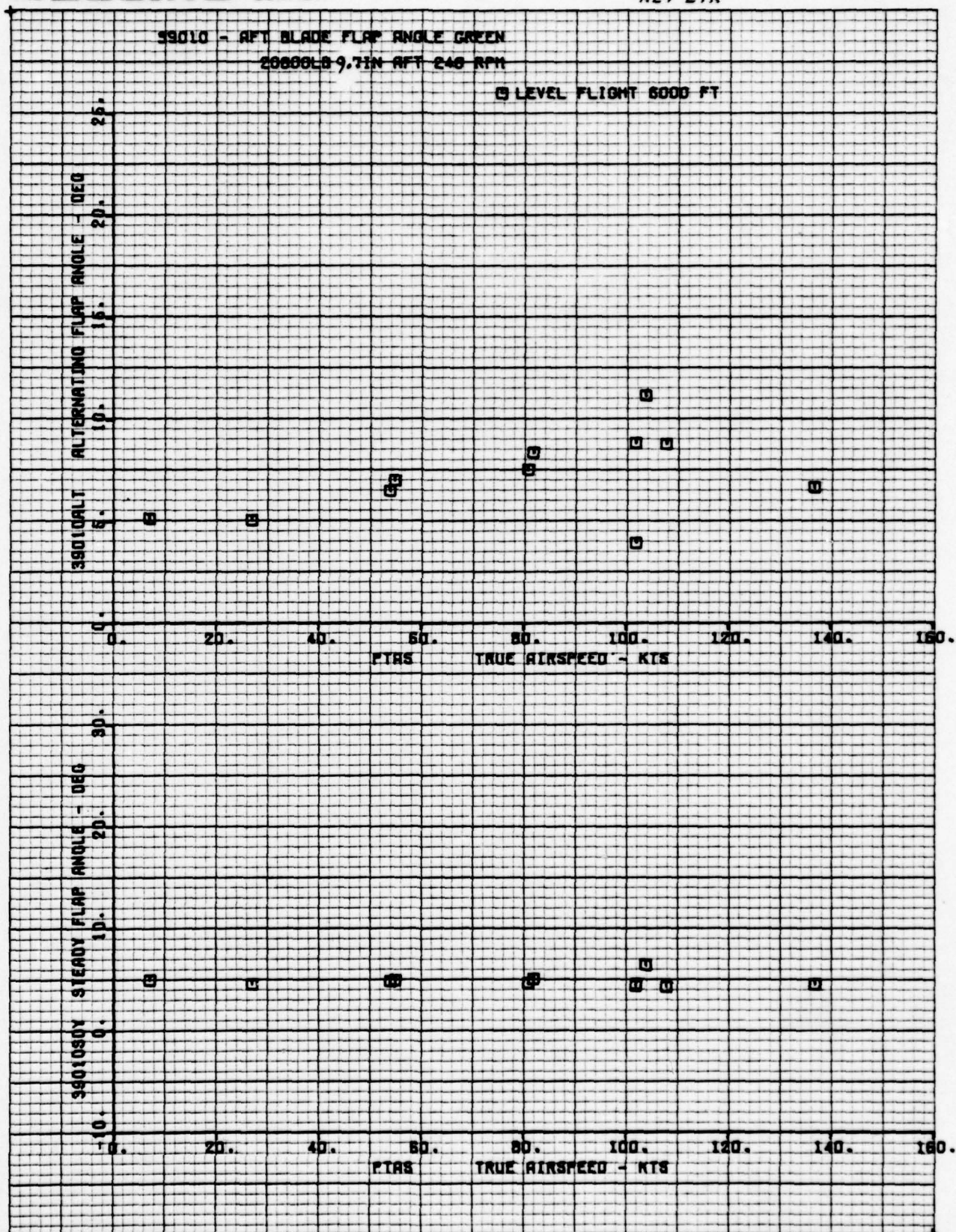




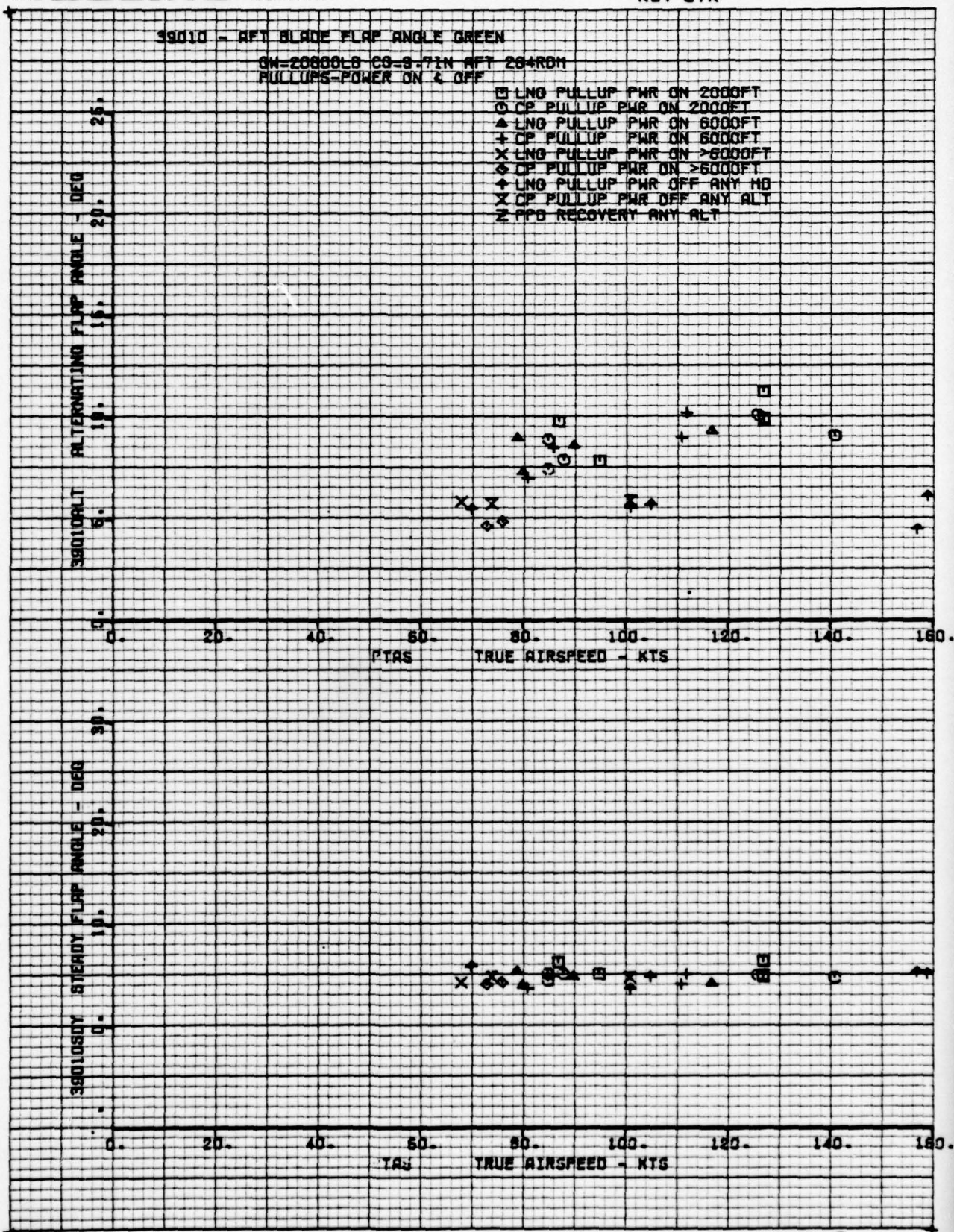
THE **BOEING** COMPANY

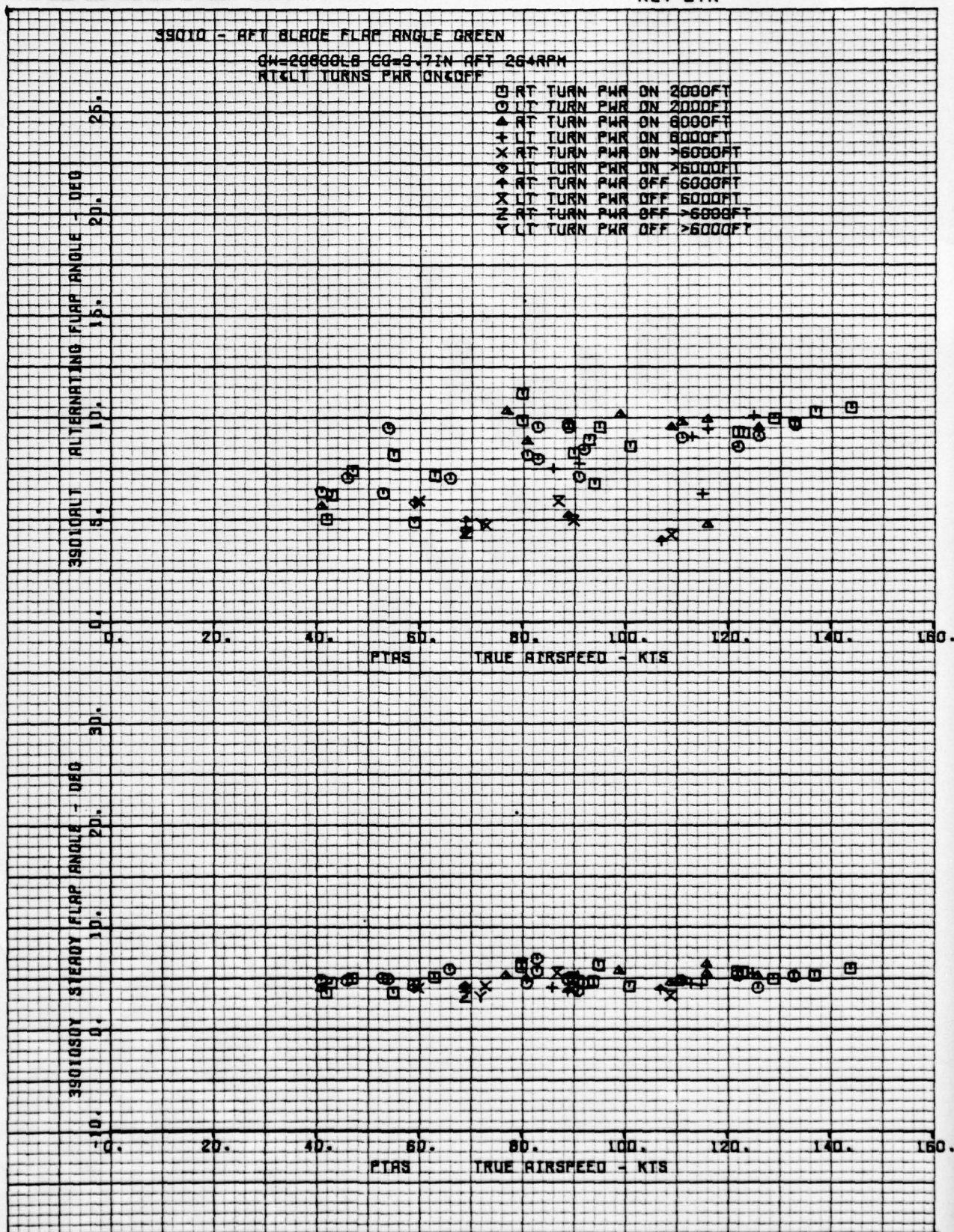
NUMBER
REV LTR

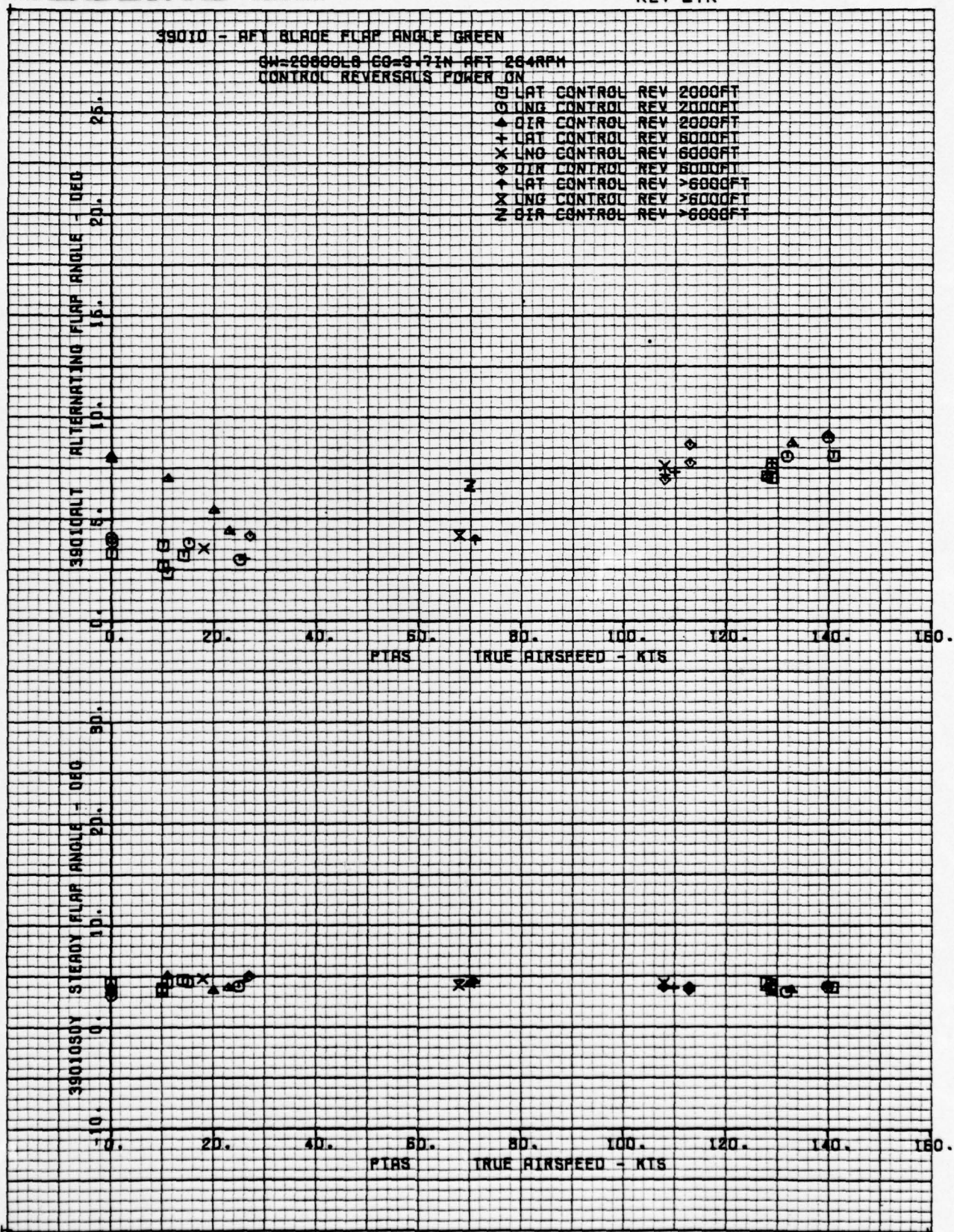
D210-11168-3
VOLUME 4



FORM 52300 (10/71)

THE **BOEING** COMPANY

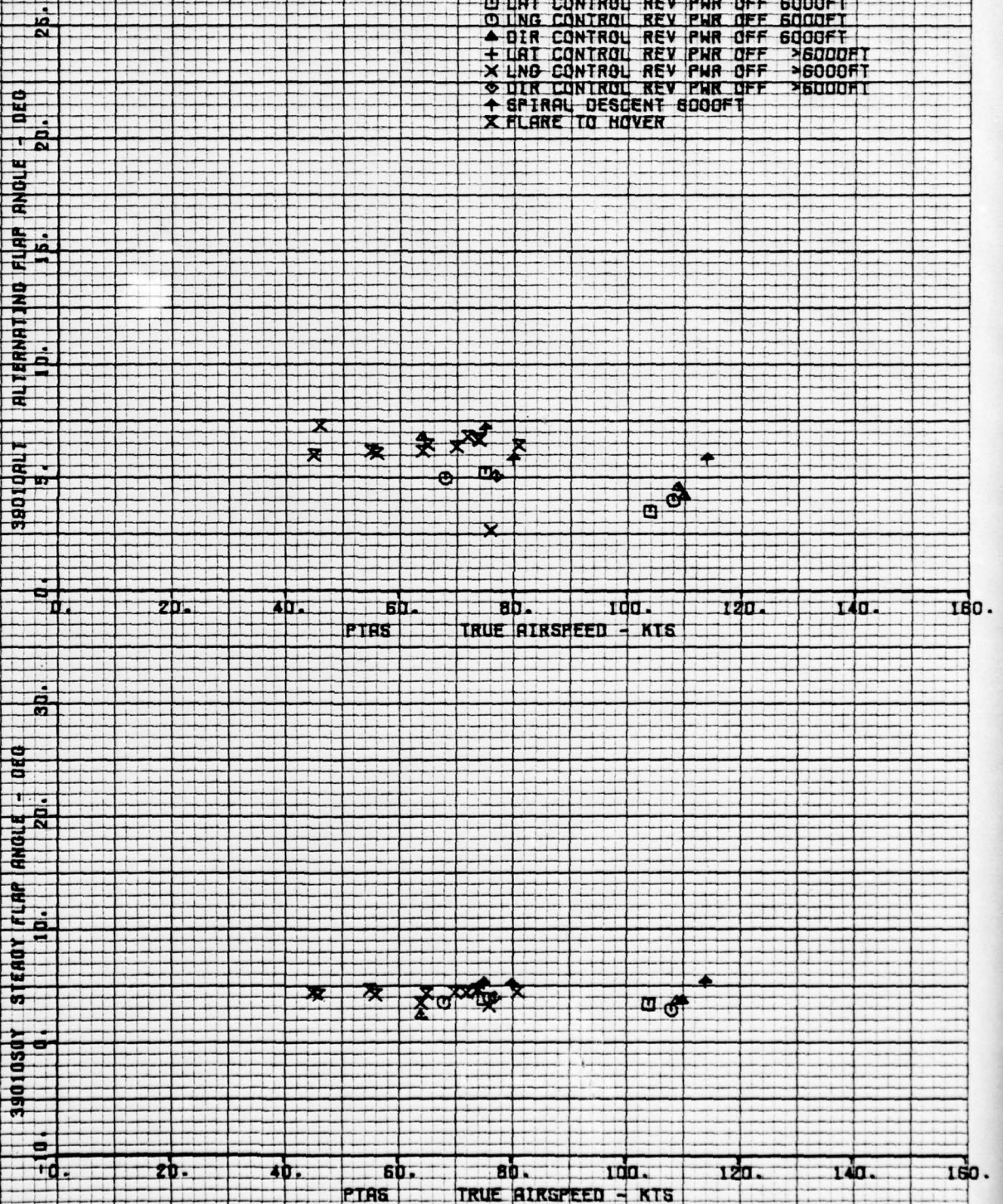


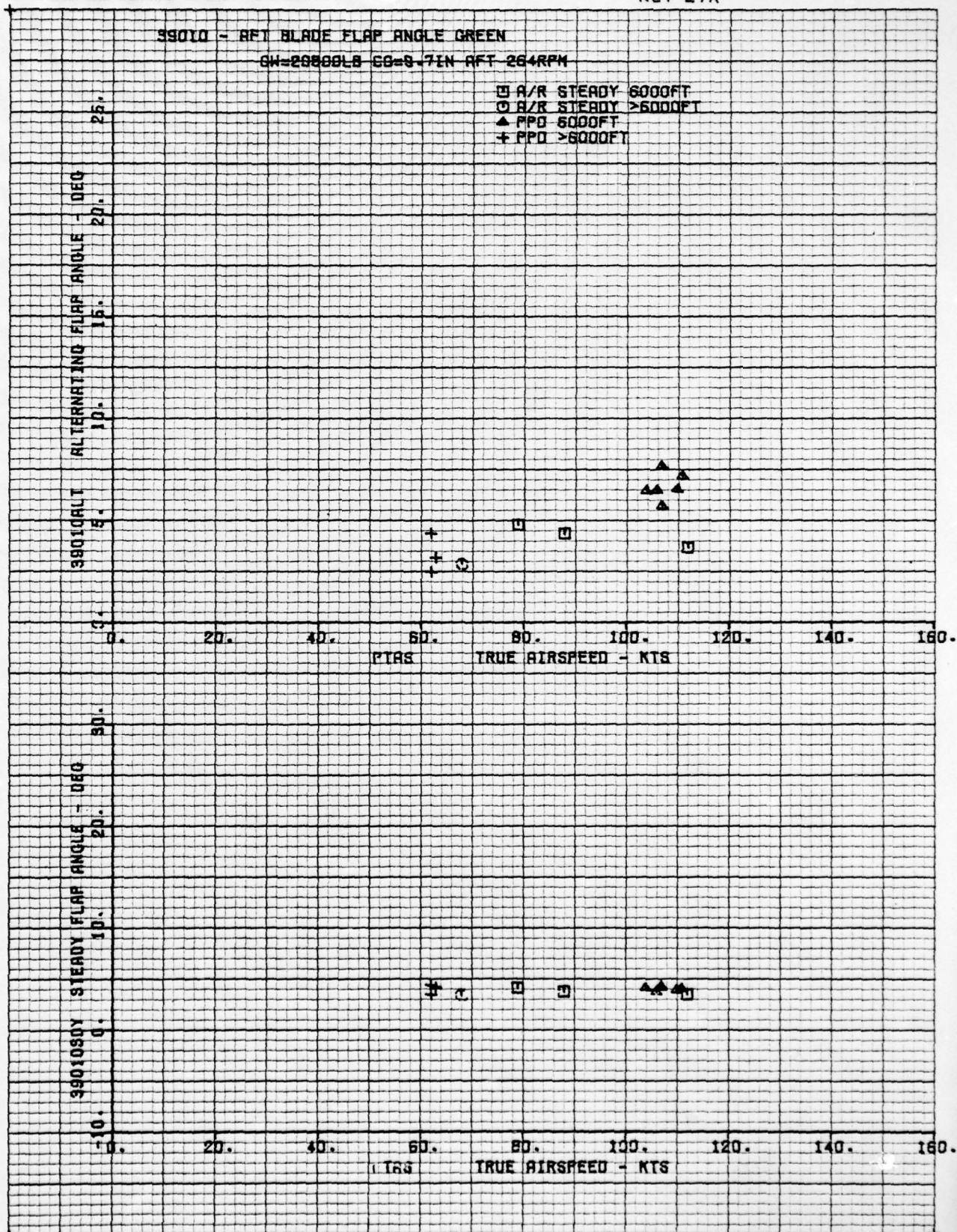


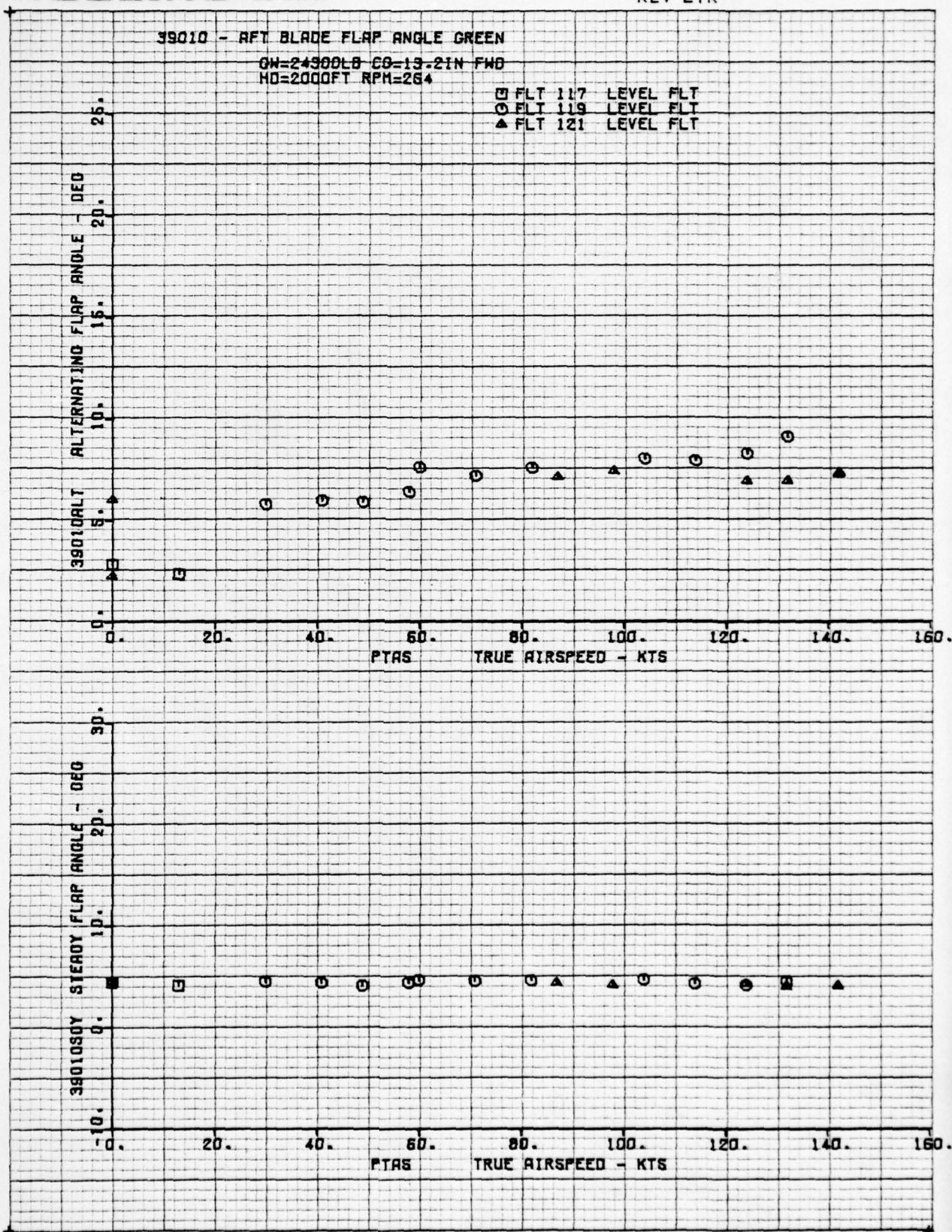
39010 - AFT BLADE FLAP ANGLE GREEN

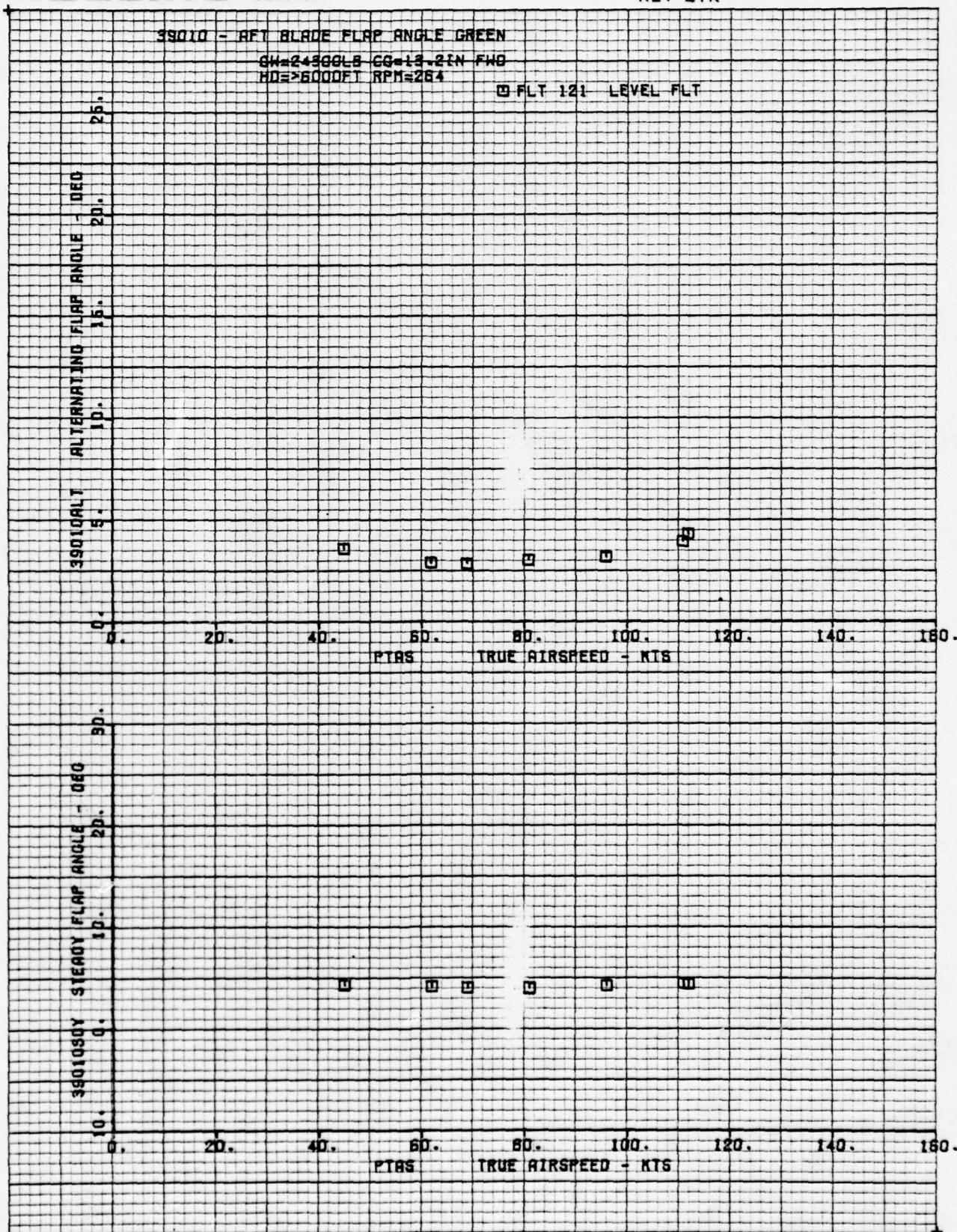
GW=20800LB GS=9.7IN AFT 264RPM

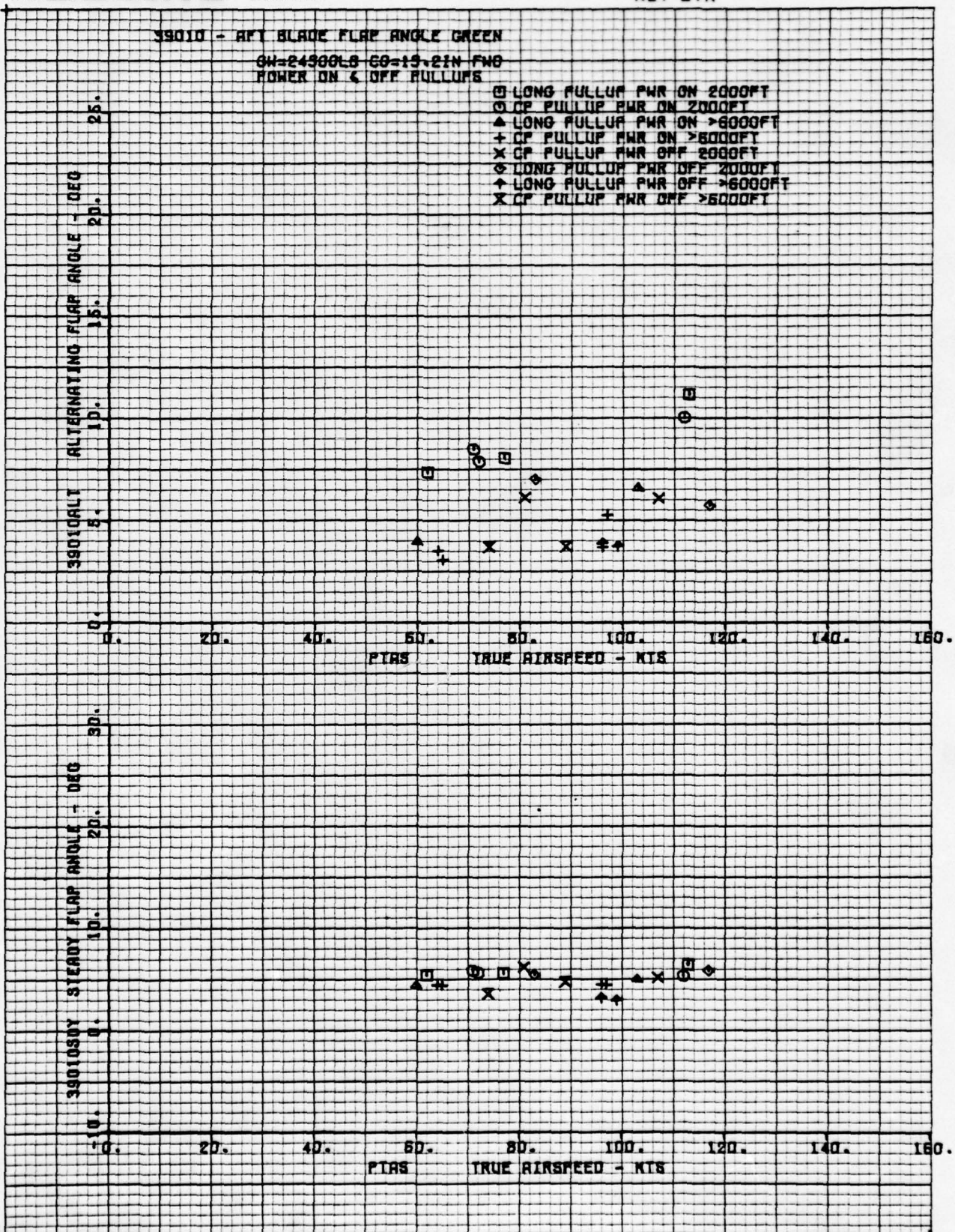
- LAT CONTROL REV PWR OFF 6000FT
- LING CONTROL REV PWR OFF 6000FT
- ▲ DIR CONTROL REV PWR OFF 6000FT
- + LAT CONTROL REV PWR OFF >6000FT
- x LING CONTROL REV PWR OFF >6000FT
- ◇ DIR CONTROL REV PWR OFF >6000FT
- ↑ SPIRAL DESCENT 6000FT
- x FLARE TO HOVER

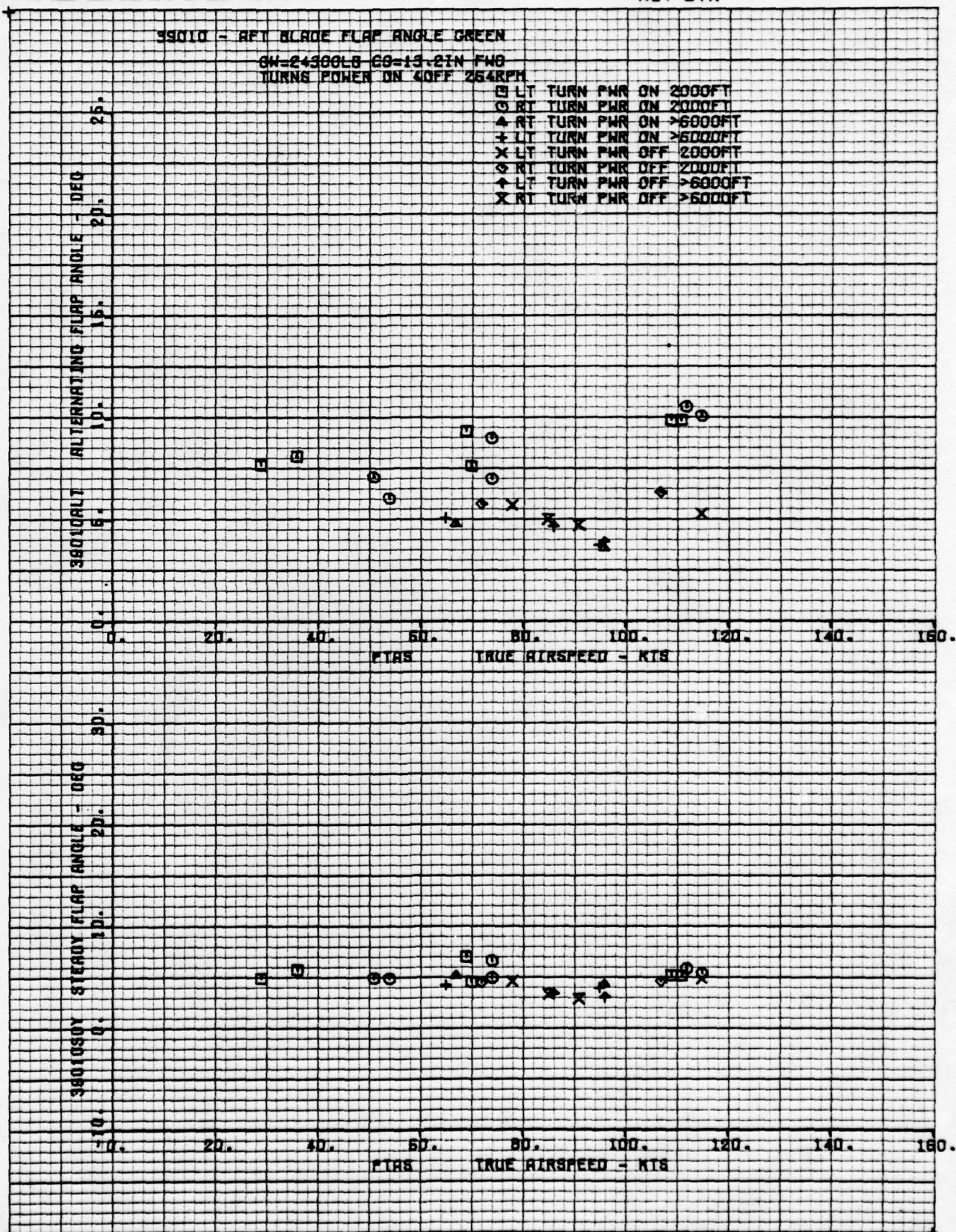


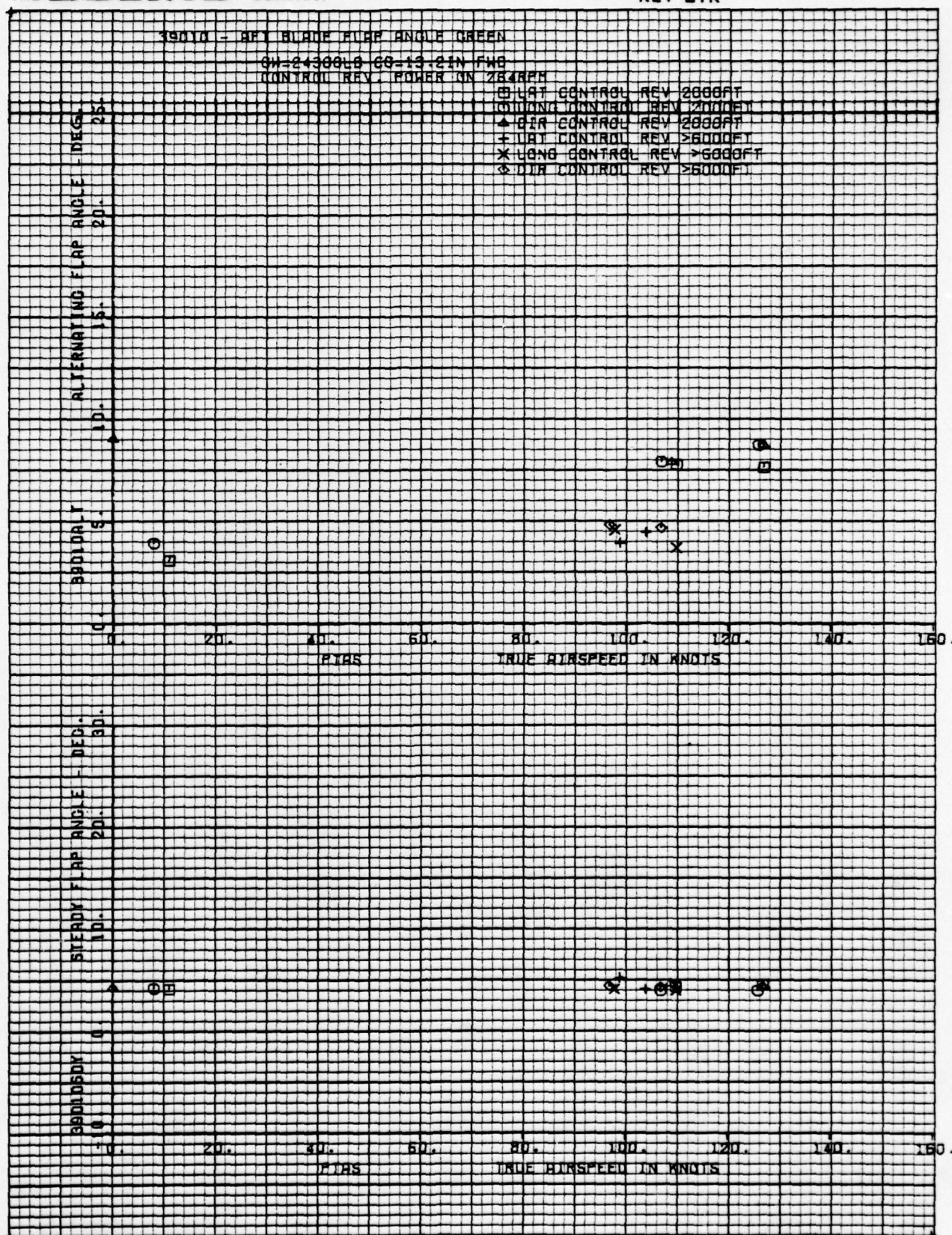


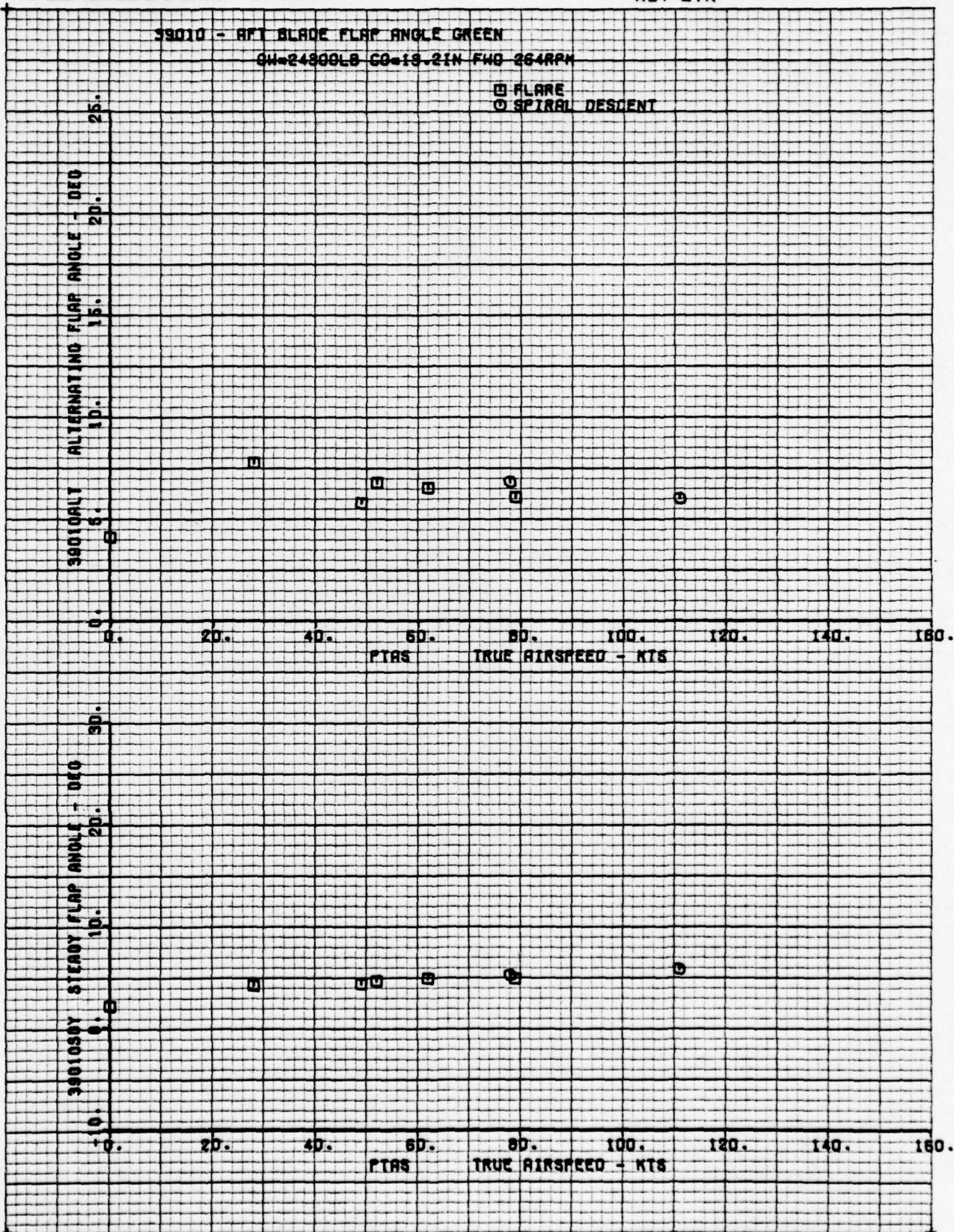




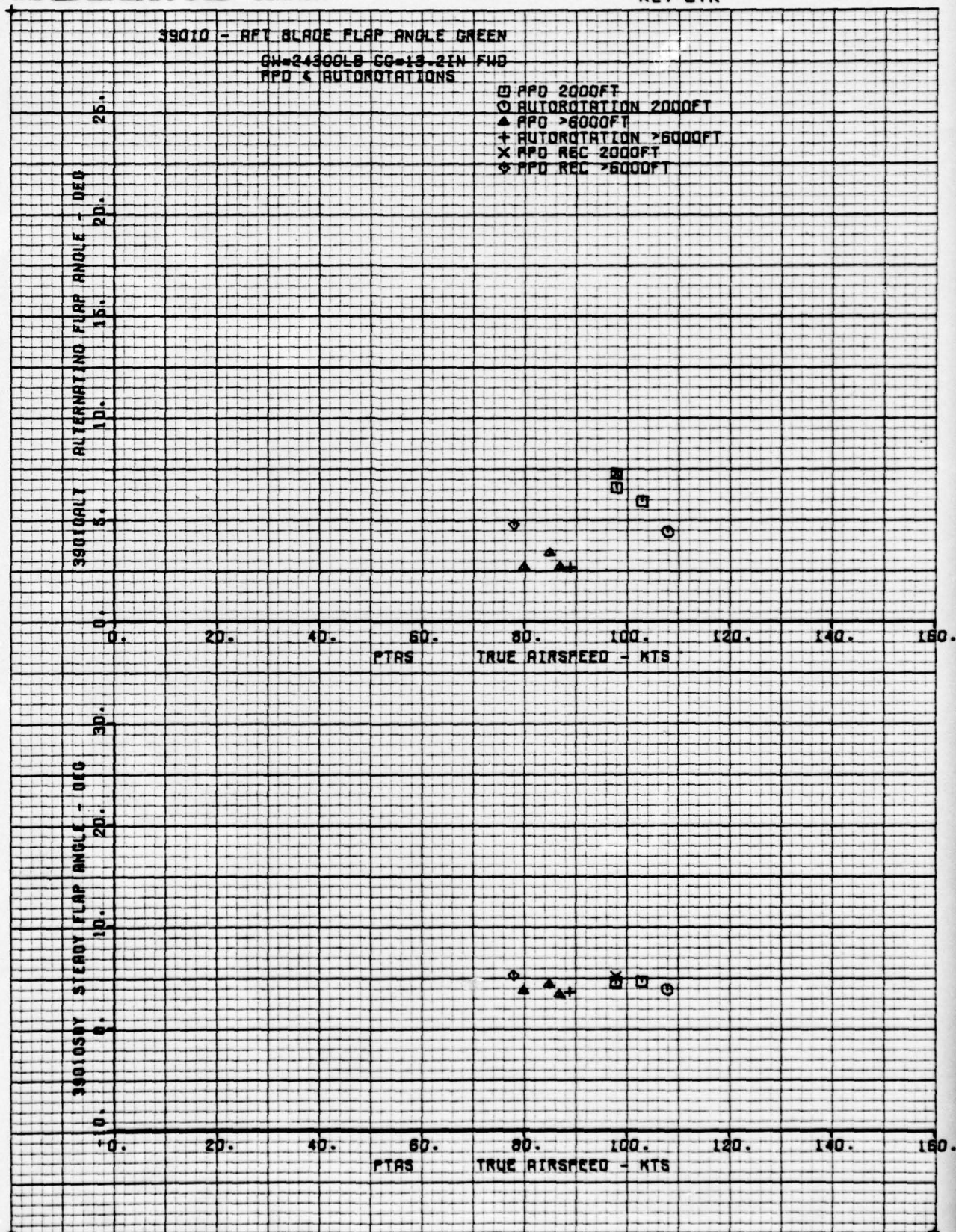




THE **BOEING** COMPANY

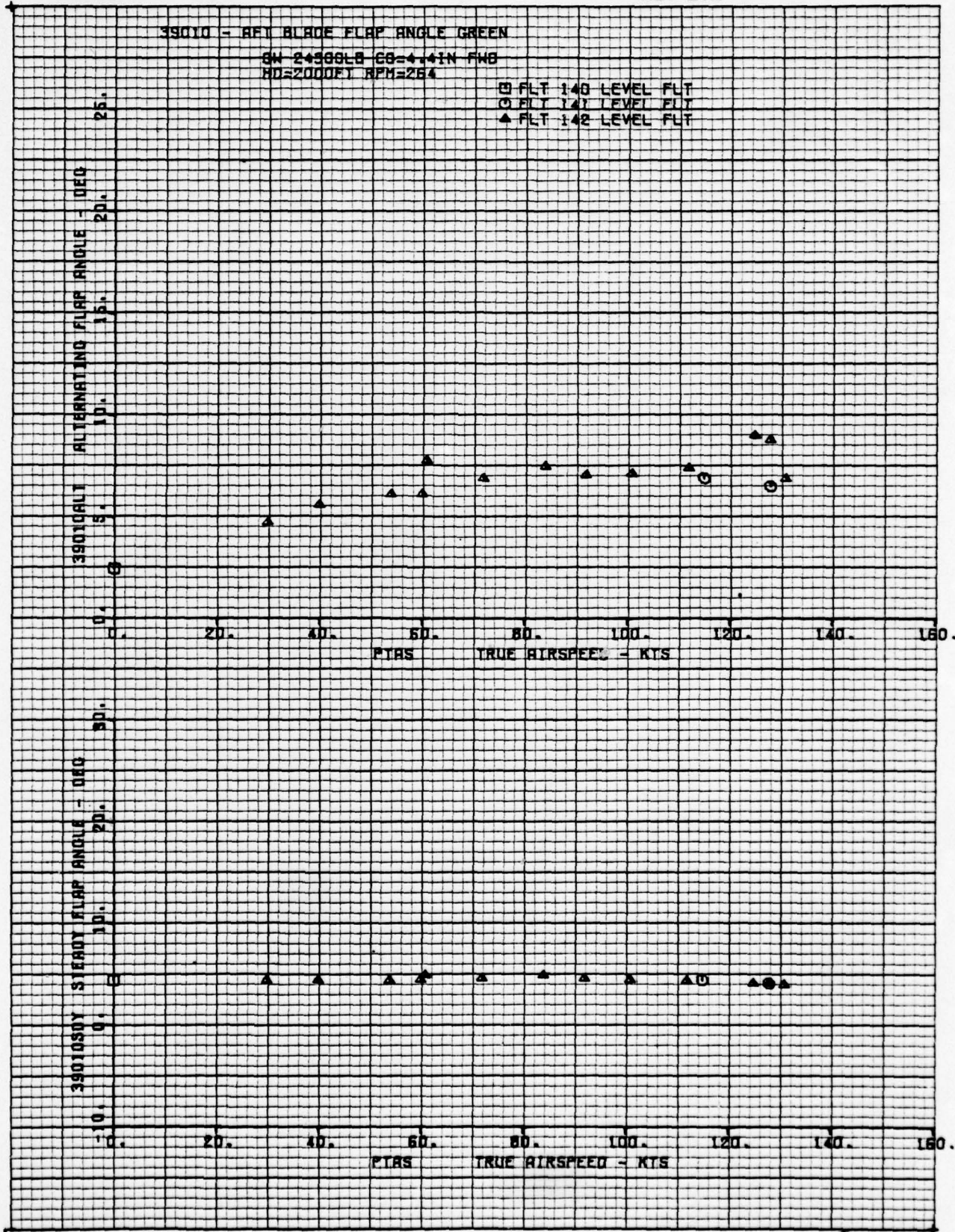


THE **BOEING** COMPANY



THE **BOEING** COMPANY

D210-11118-3
NUMBER 1 VOLUME 4
REV LTR

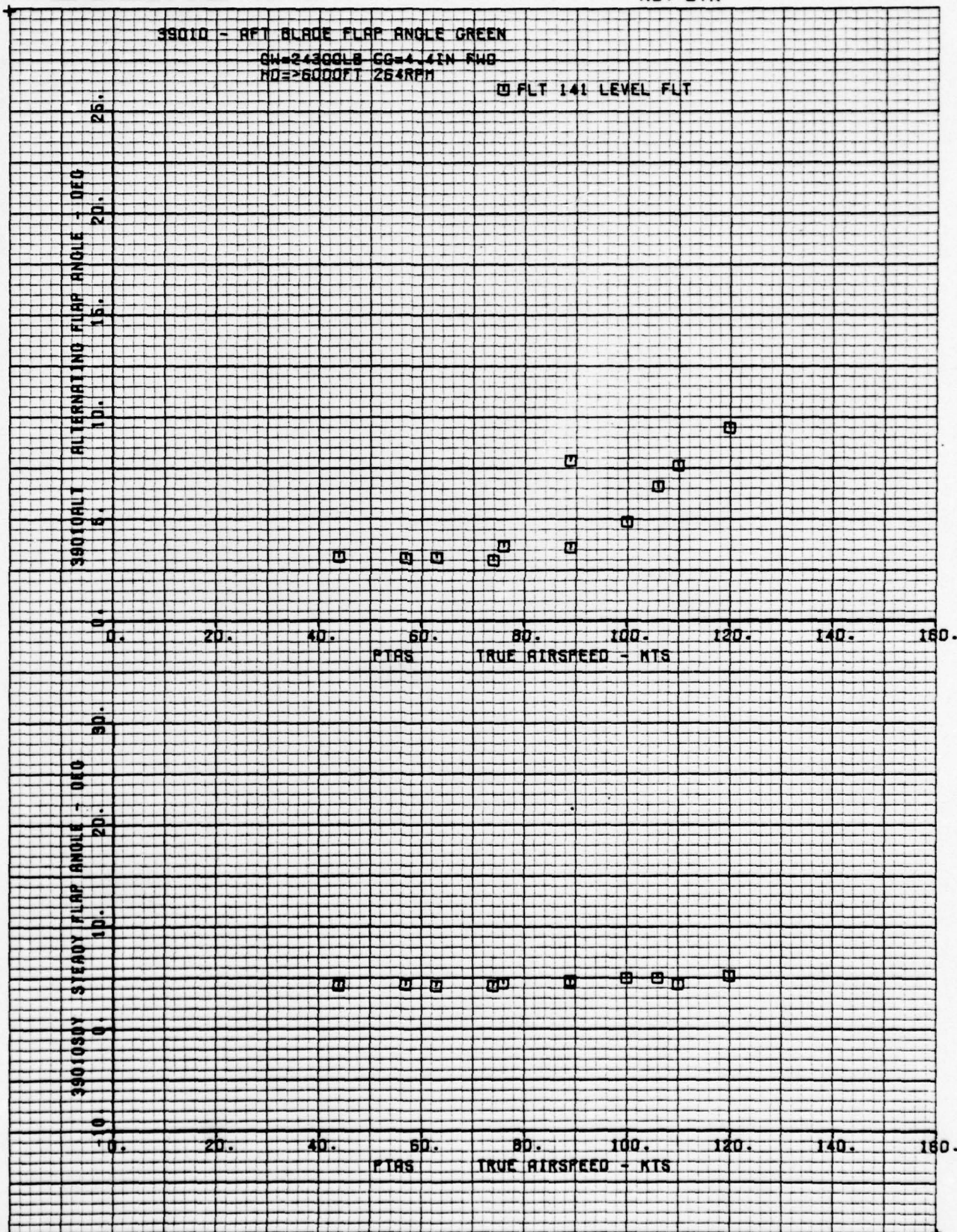


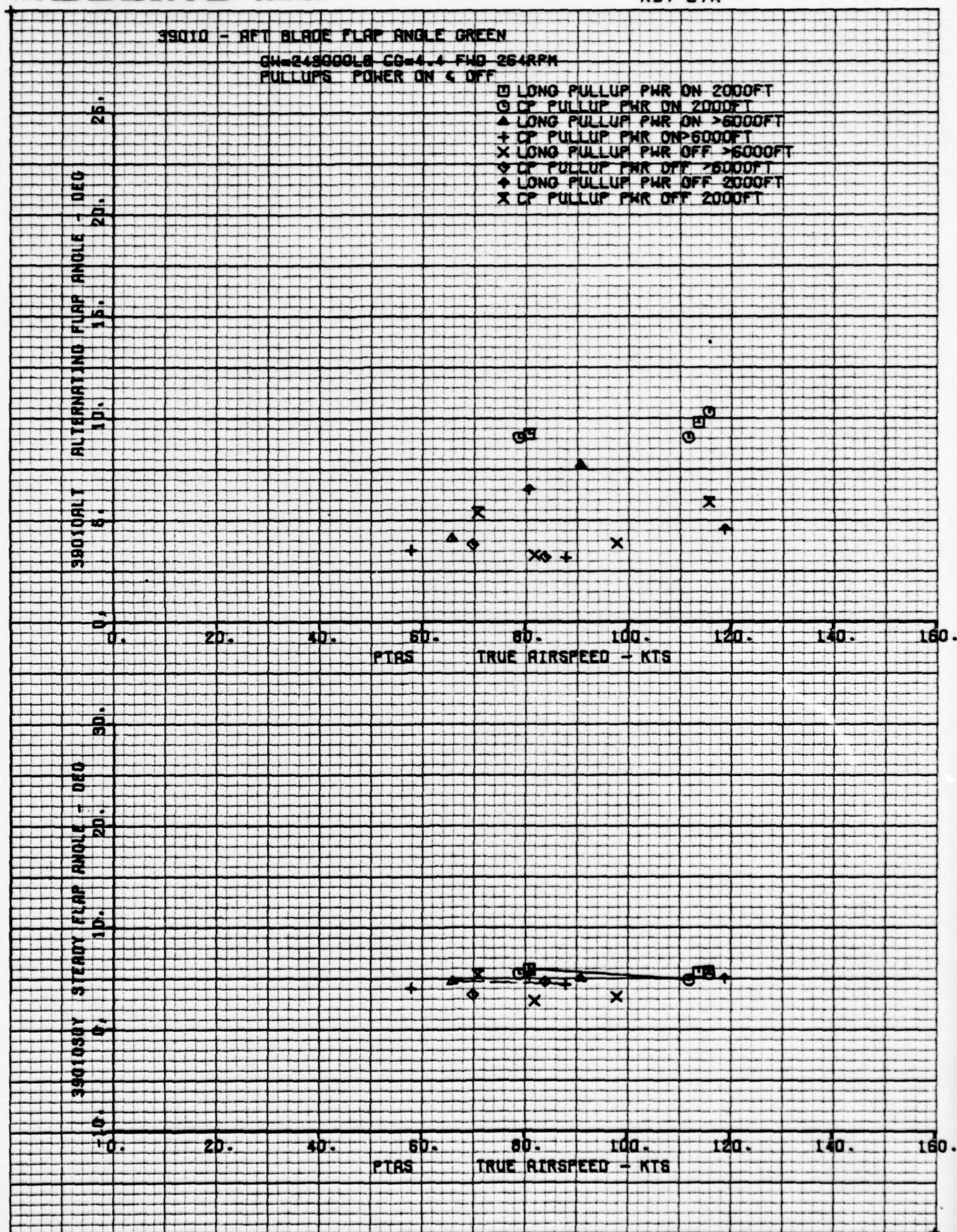
FORM 52300 (10/71)

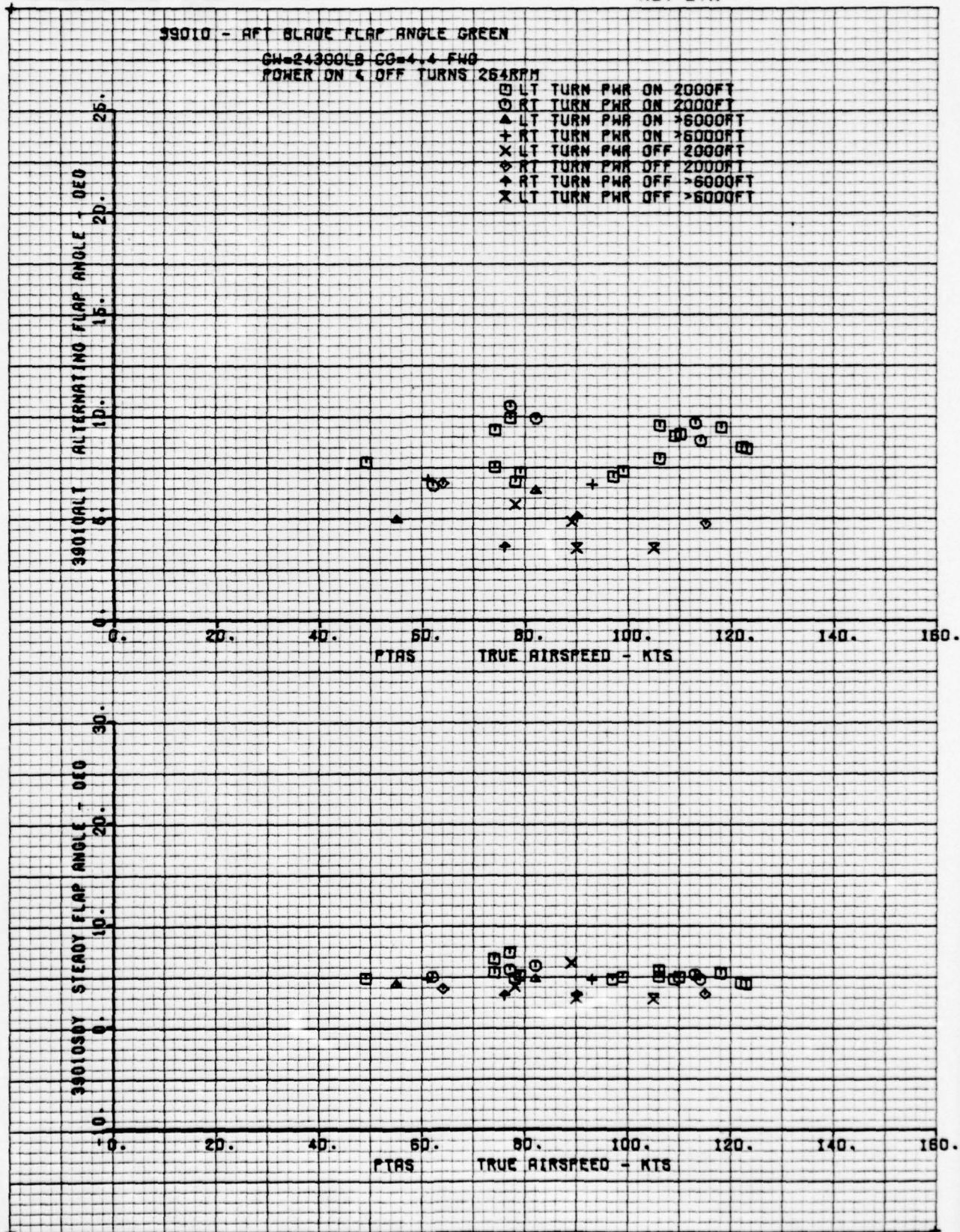
THE **BOEING** COMPANY

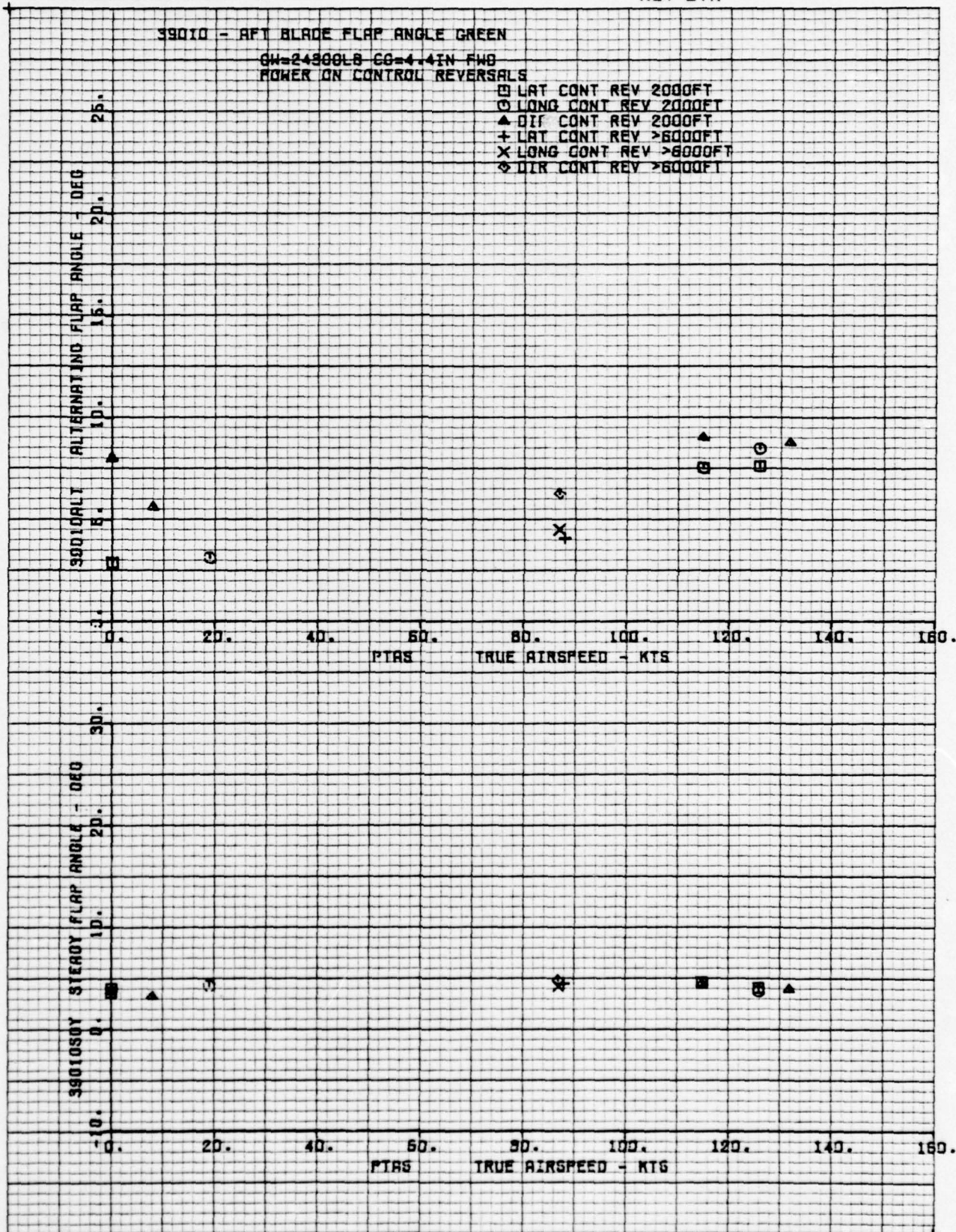
D210-11168-3

NUMBER 1 VOLUME 4
REV LTR



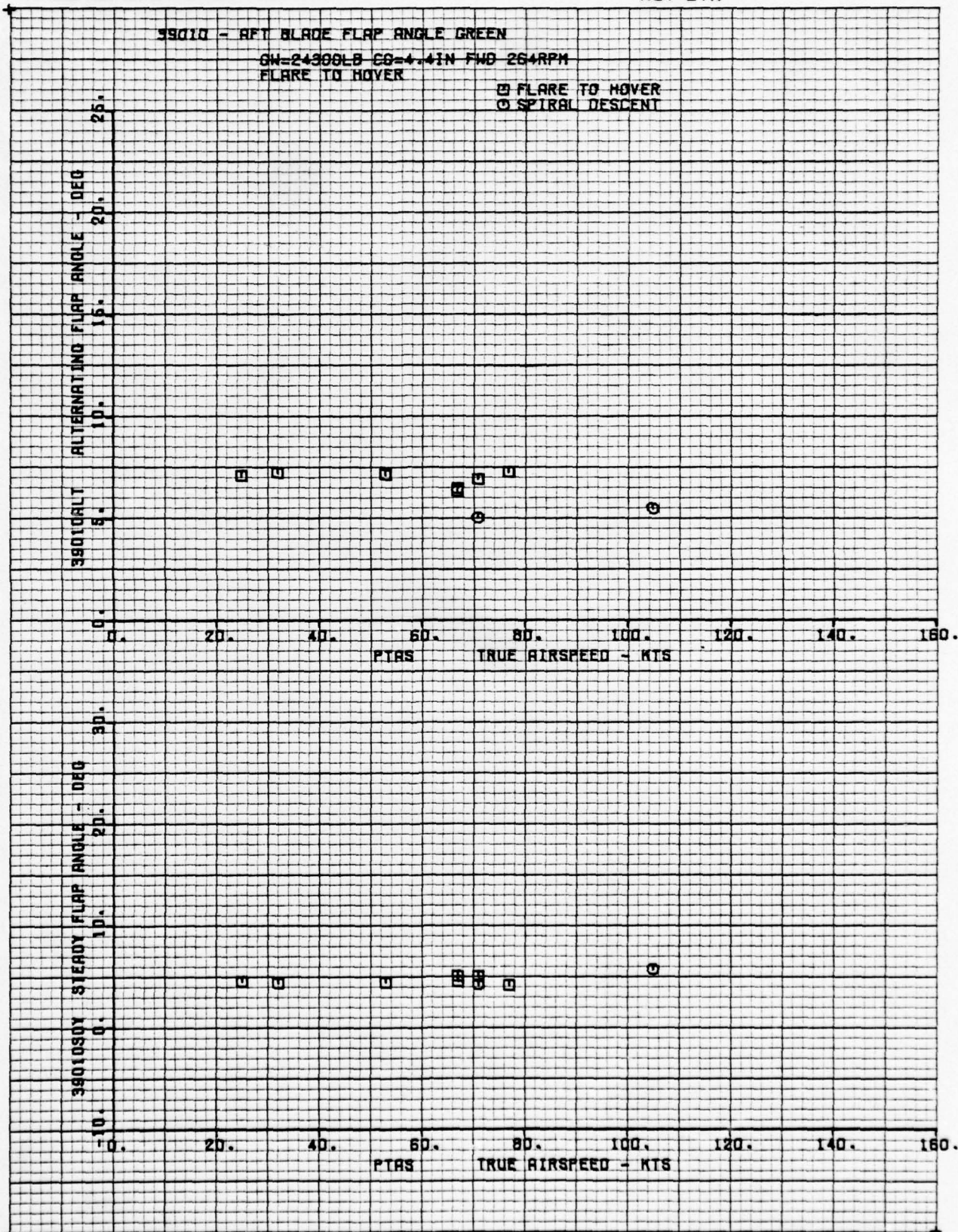
THE **BOEING** COMPANY





THE **BOEING** COMPANY

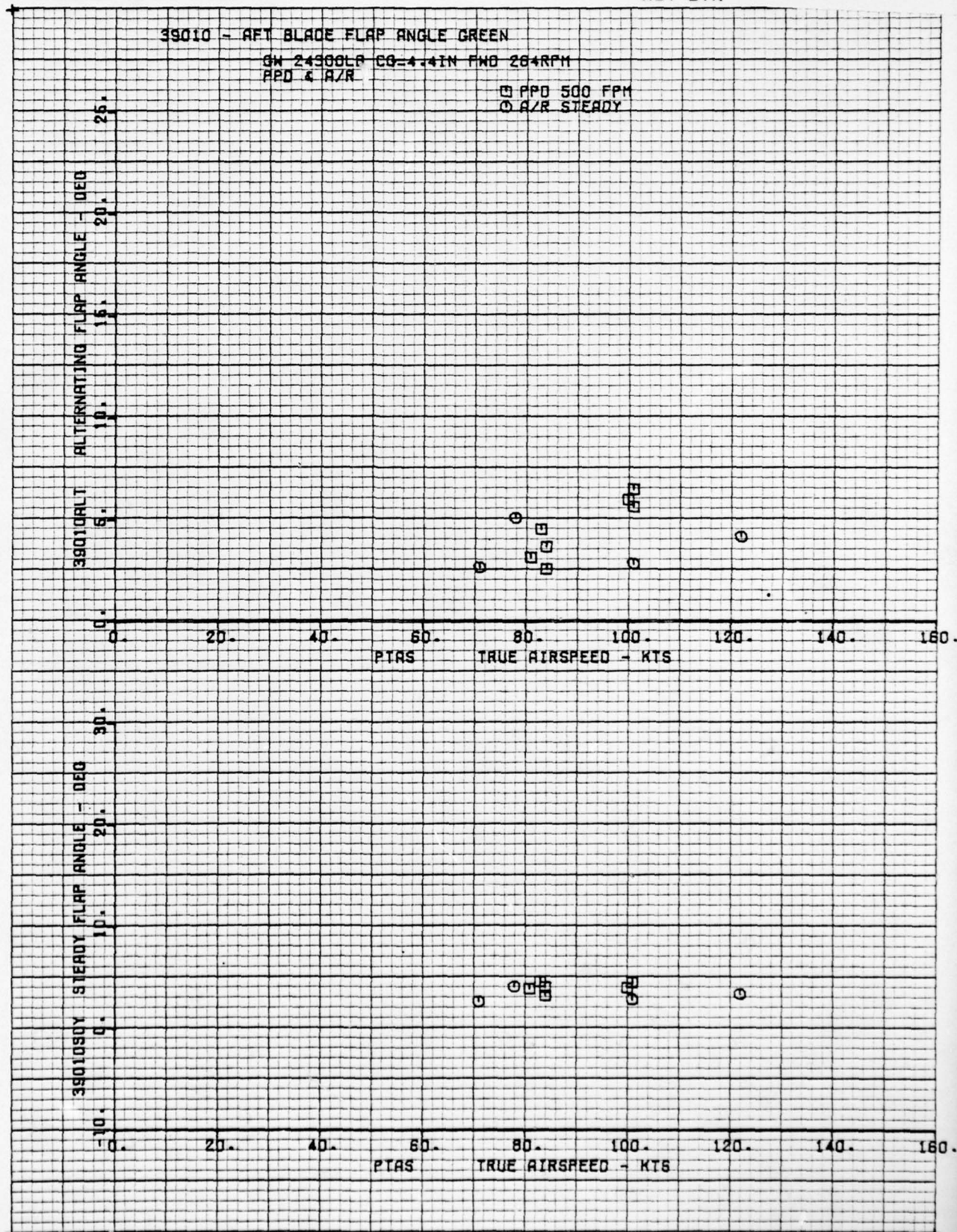
D210-11168-3
NUMBER **VOLUME 4**
REV LTR



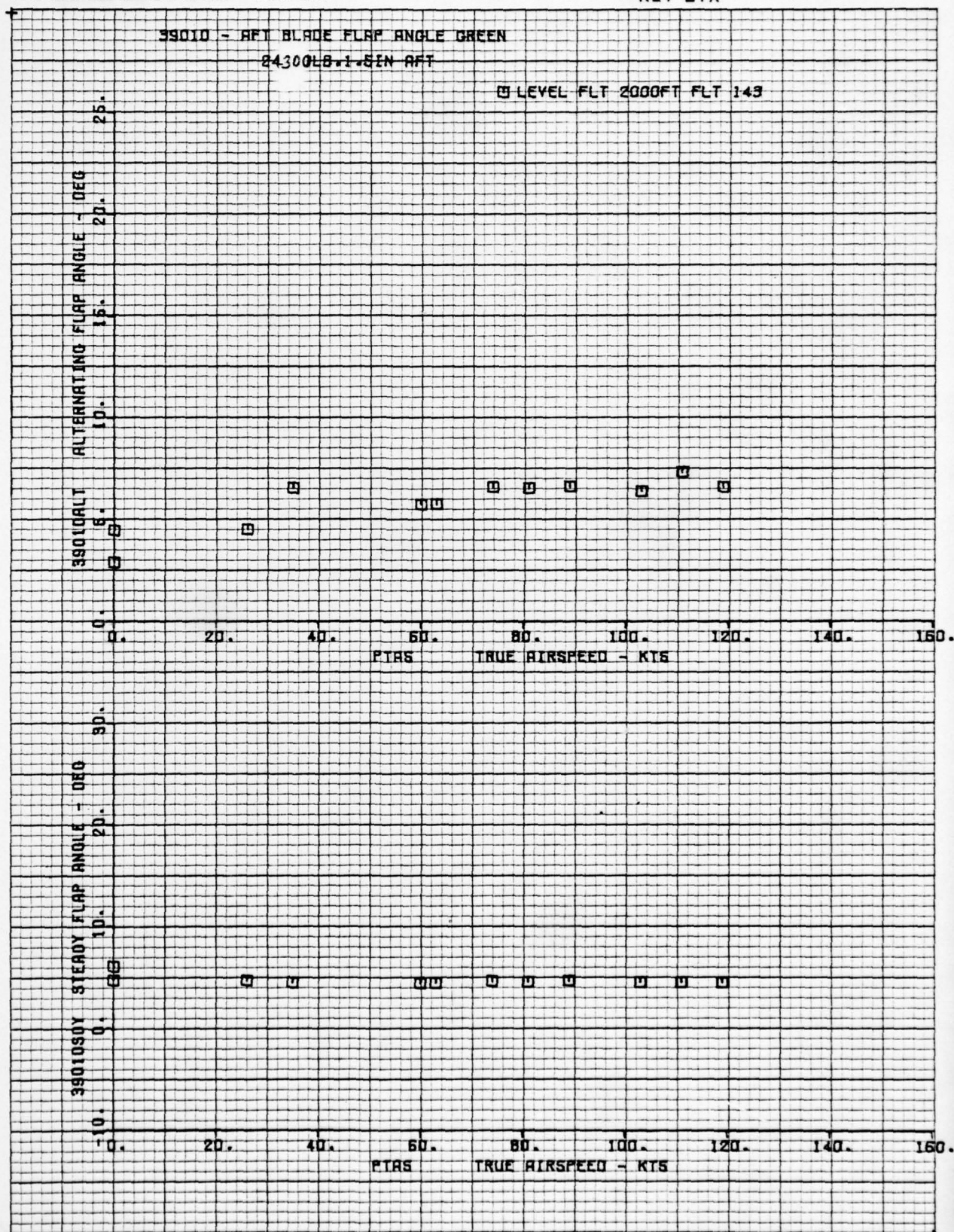
D210-11168-3

NUMBER 5217 VOLUME 4
REV LTR

THE **BOEING** COMPANY



FORM 52300 (10/71)

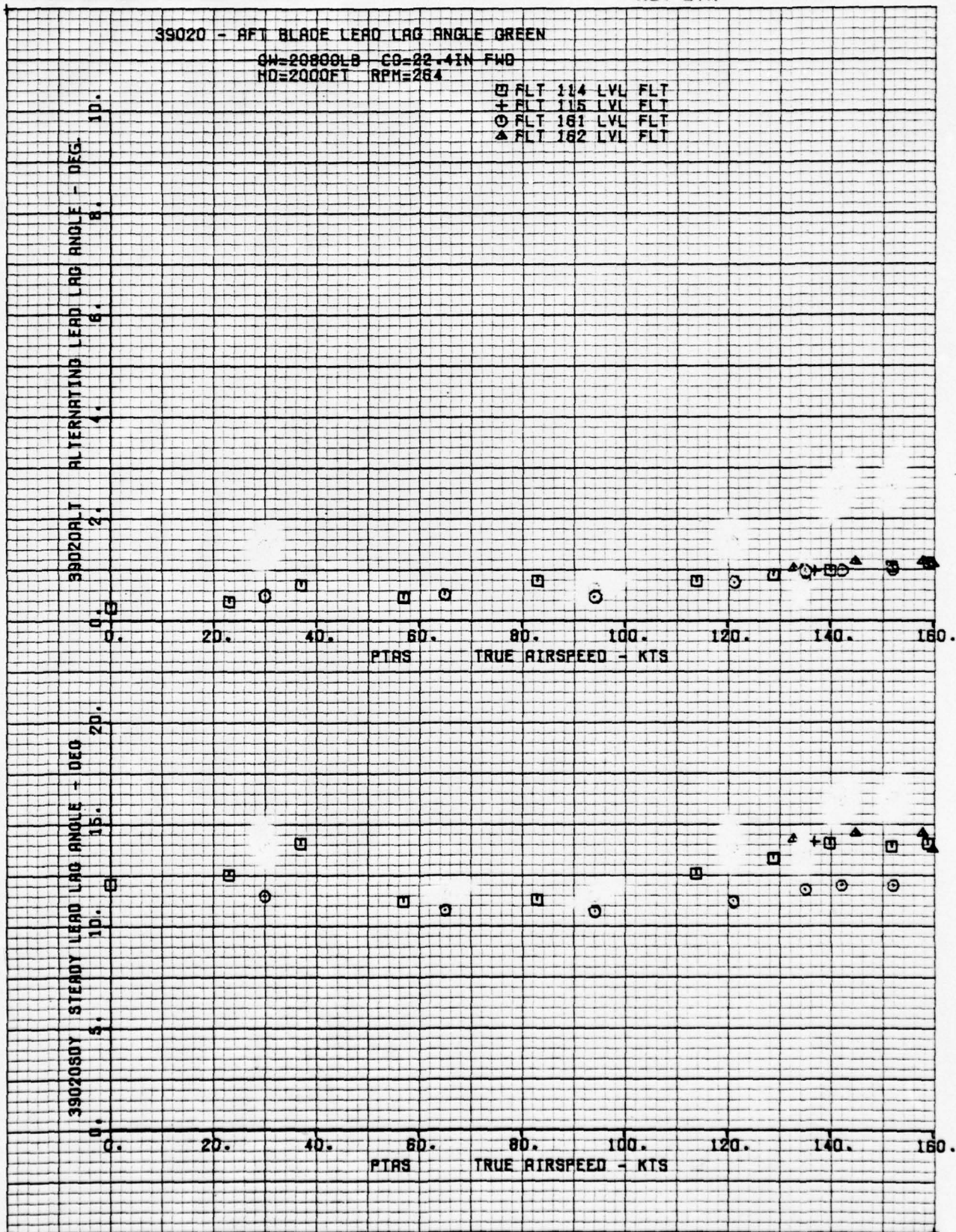


THE **BOEING** COMPANY

PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/28/78

NUMBER D210-11168-3
REV LTR Volume 4
MODEL NO.

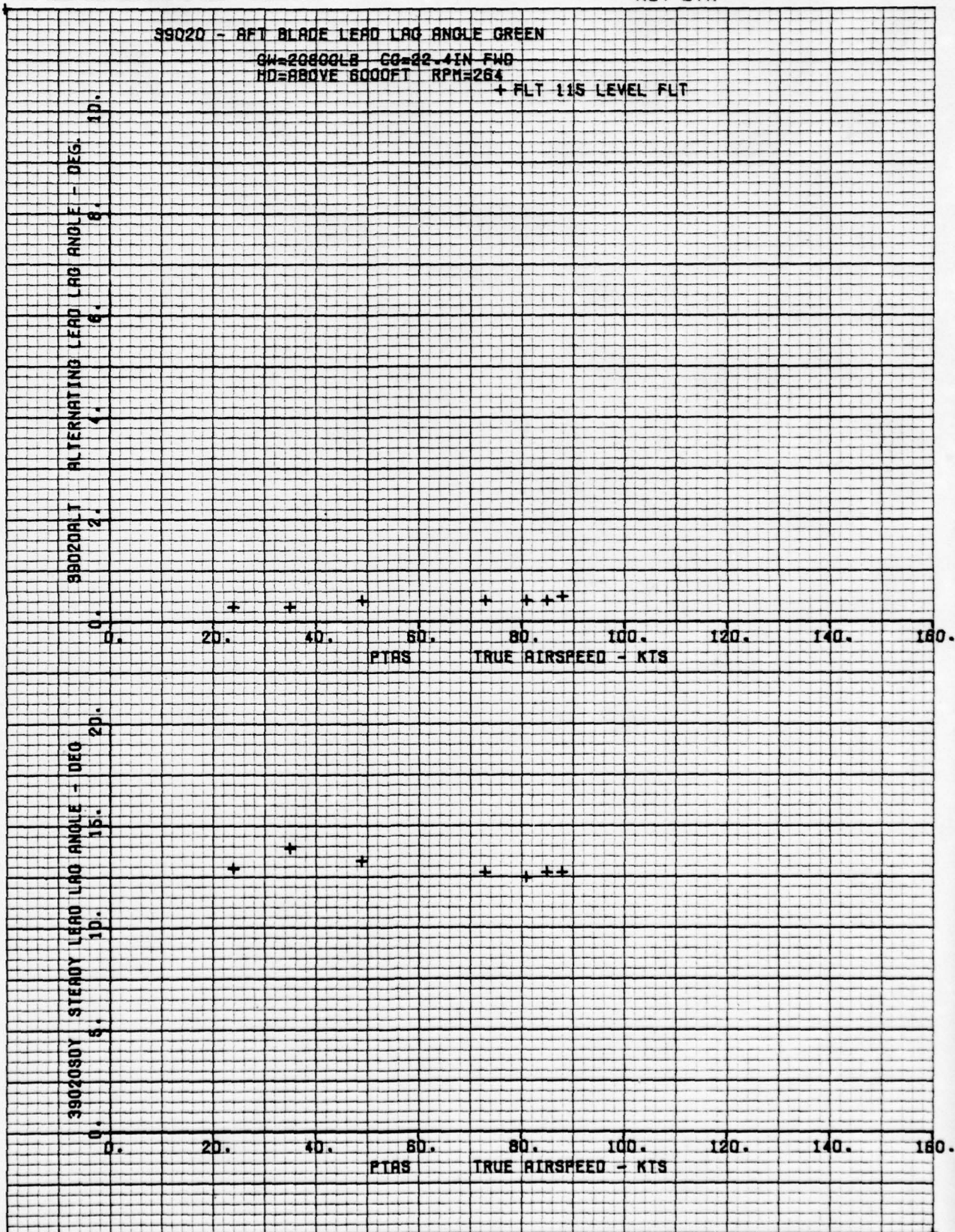
4.2 Aft Blade Lead Lag Angle

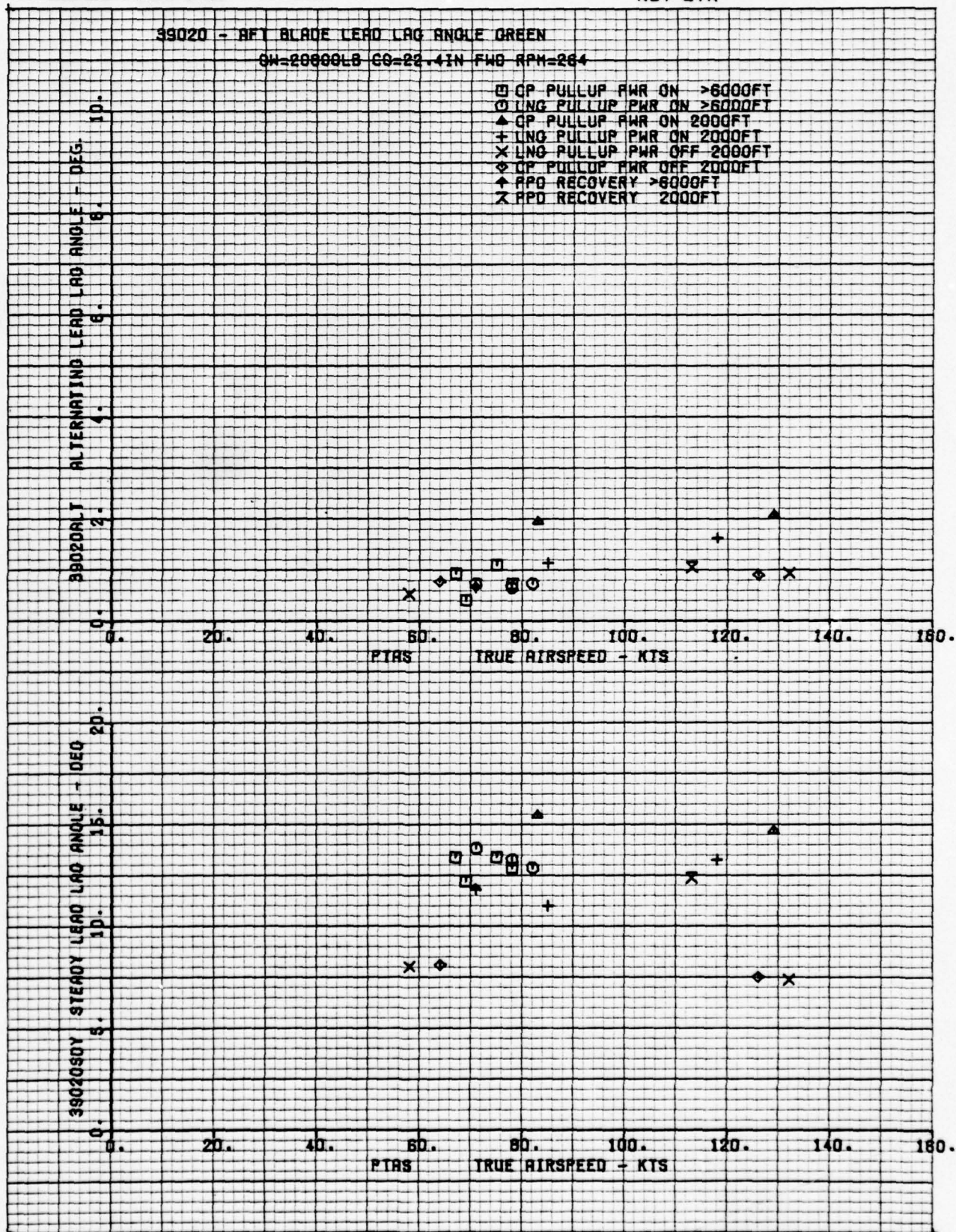


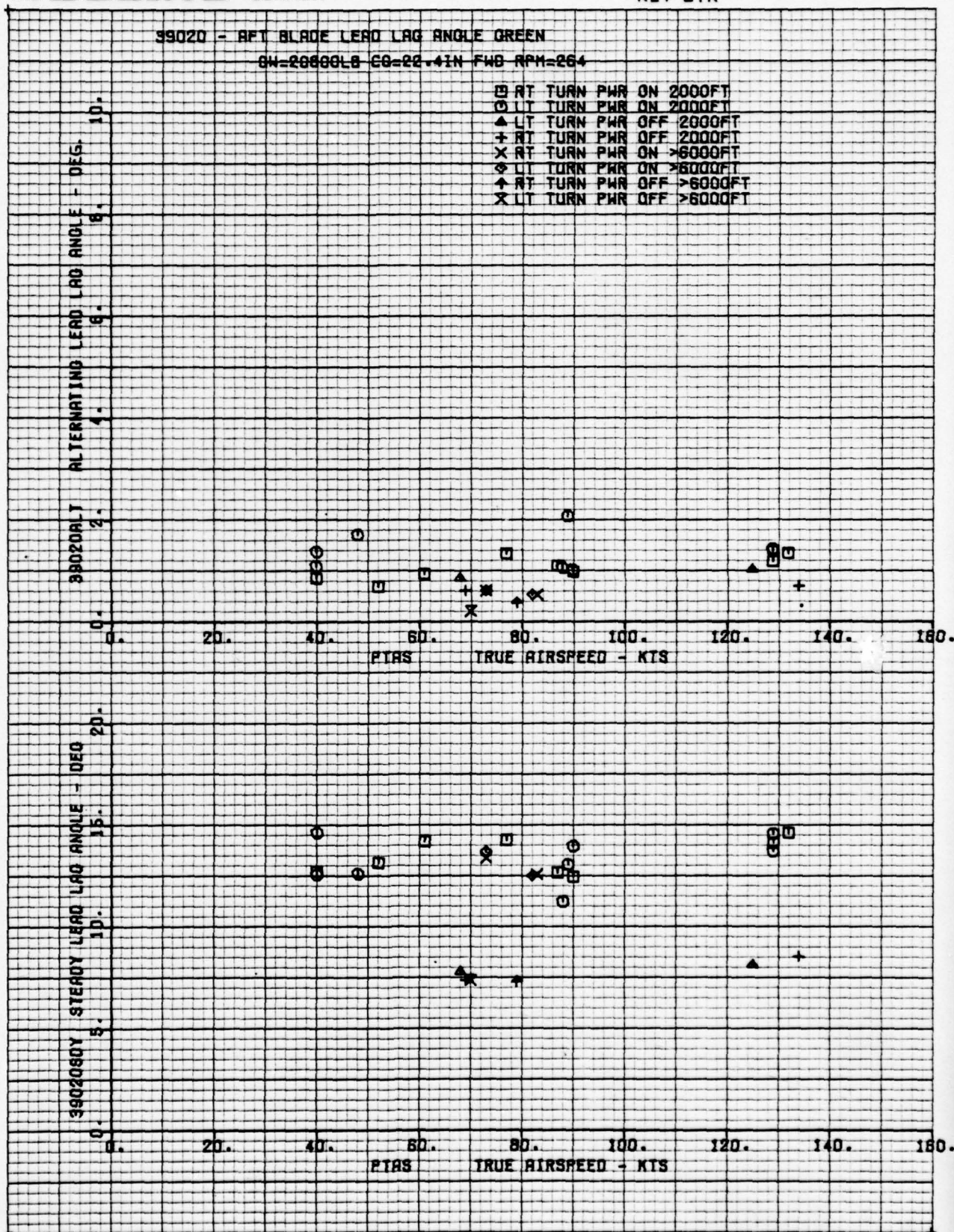
D210-11168-3

NUMBER : VOLUME 4
REV LTR

THE **BOEING** COMPANY



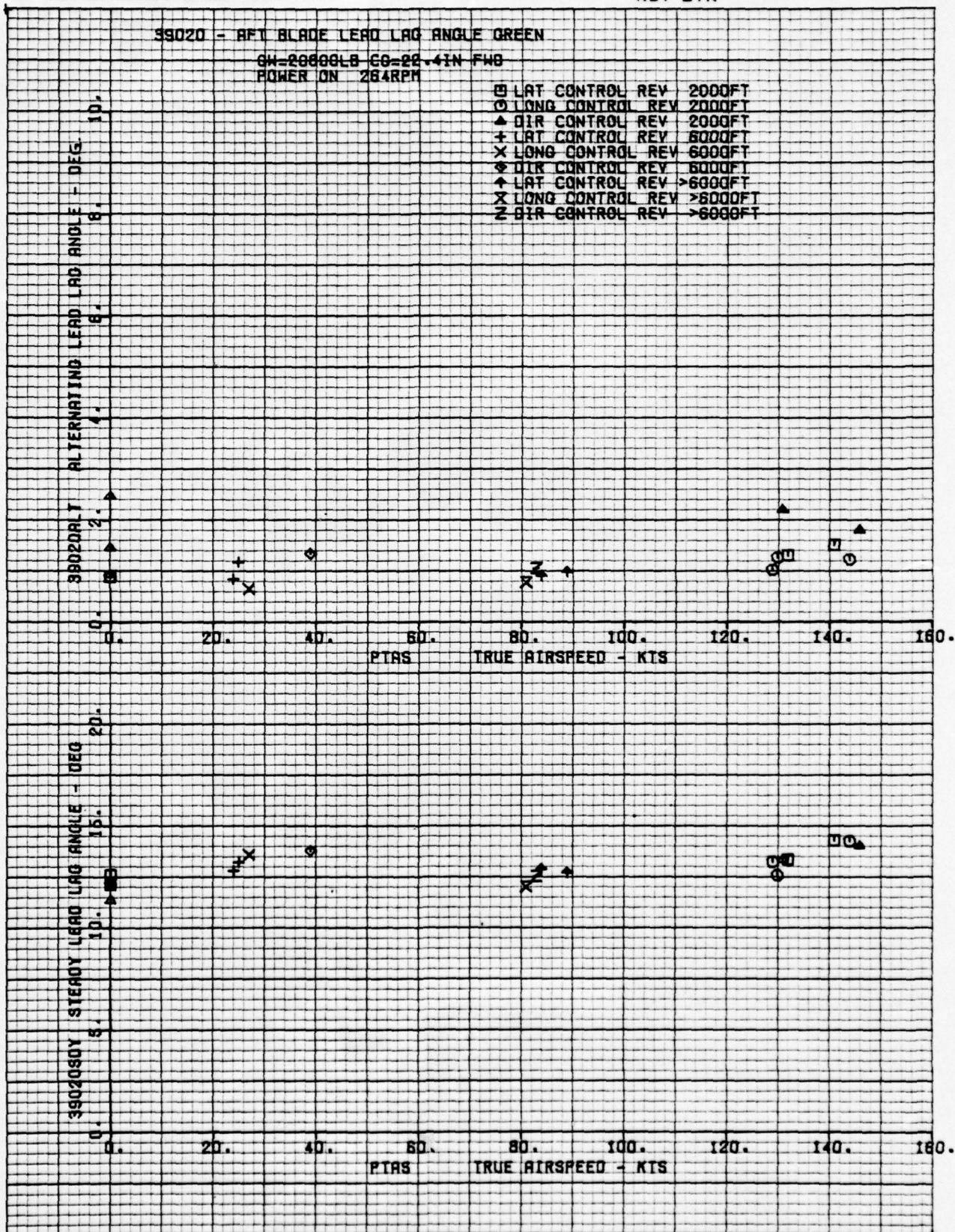


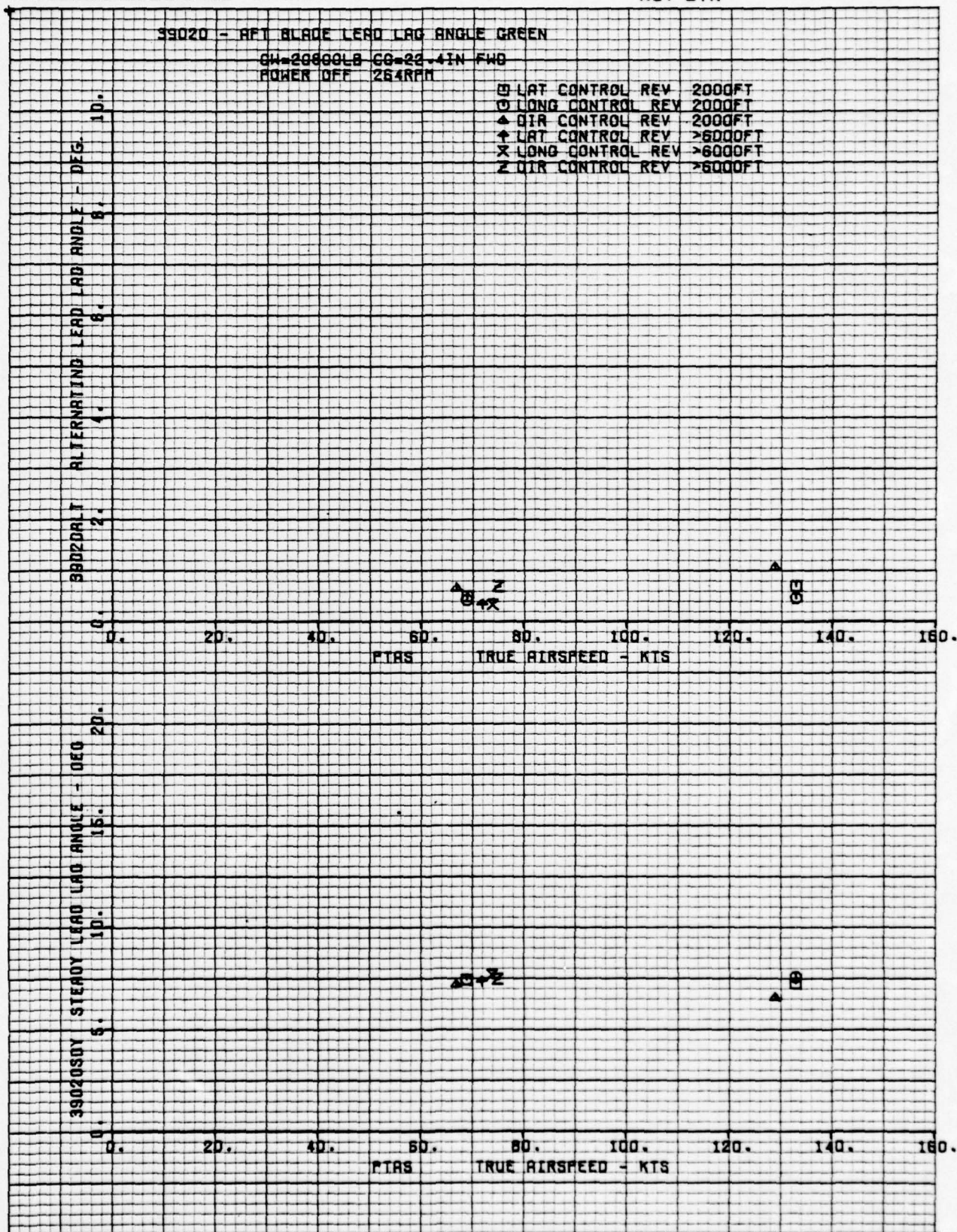


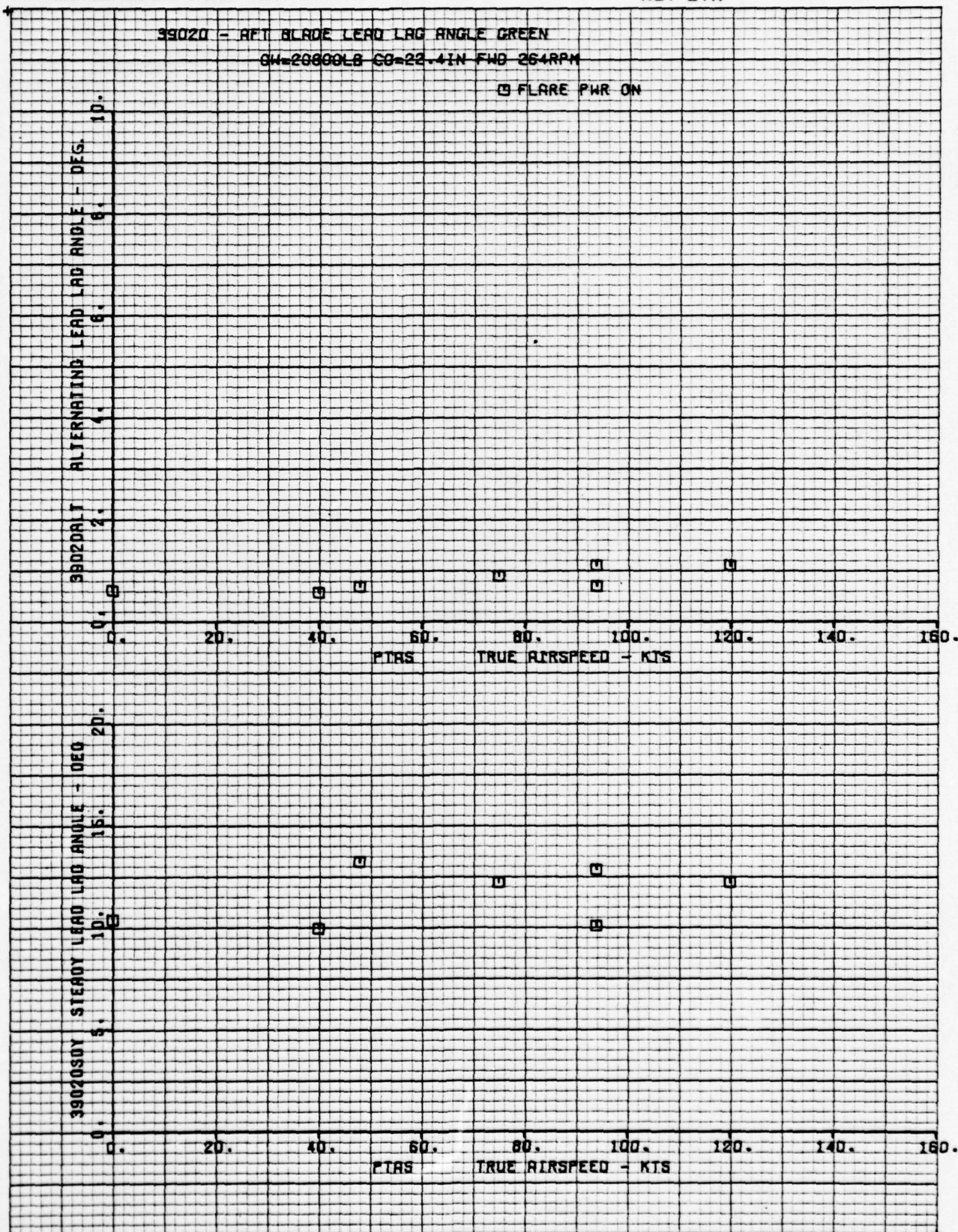
THE **BOEING** COMPANY

D210-11168-3

NUMBER 1 VOLUME 4
REV LTR



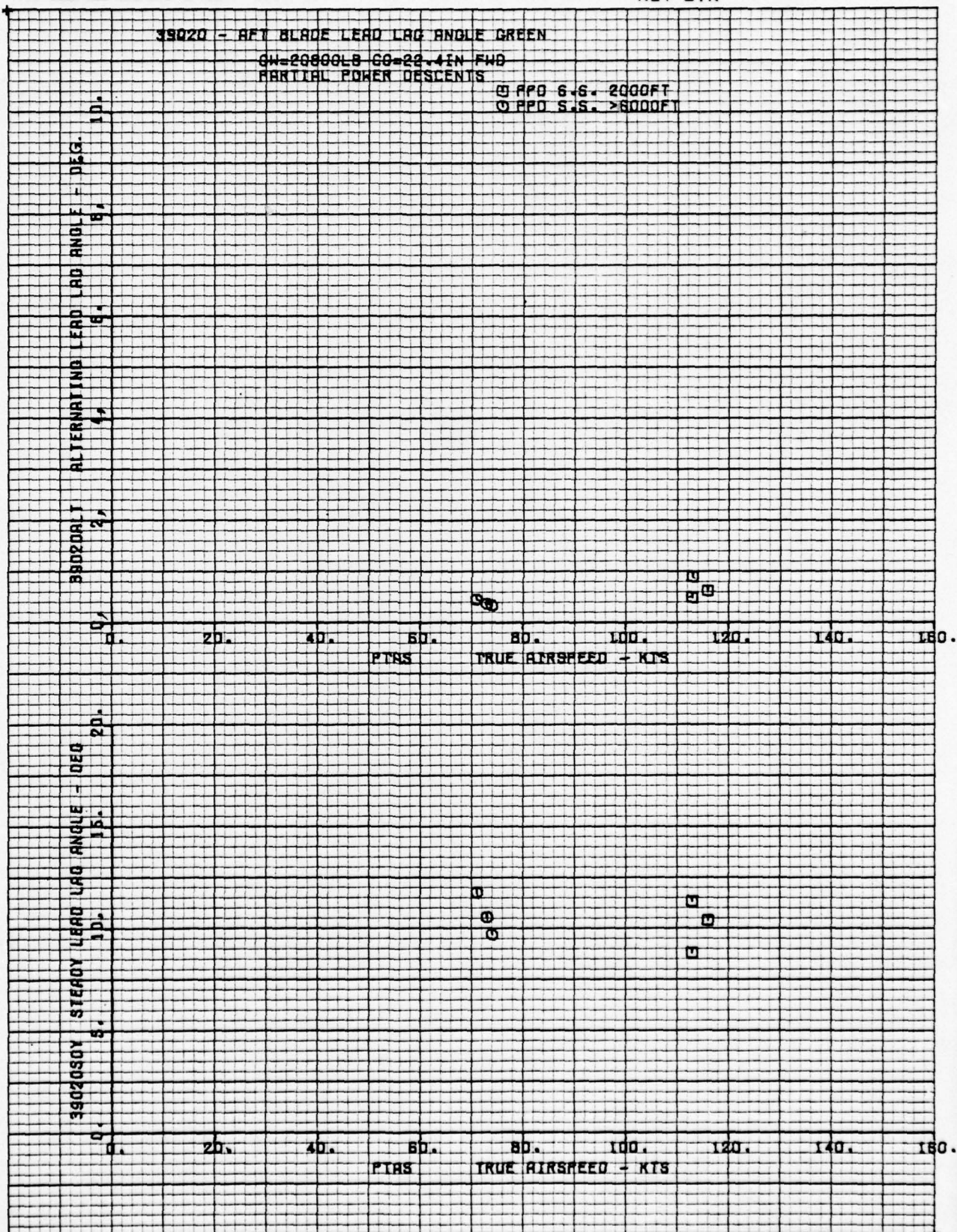


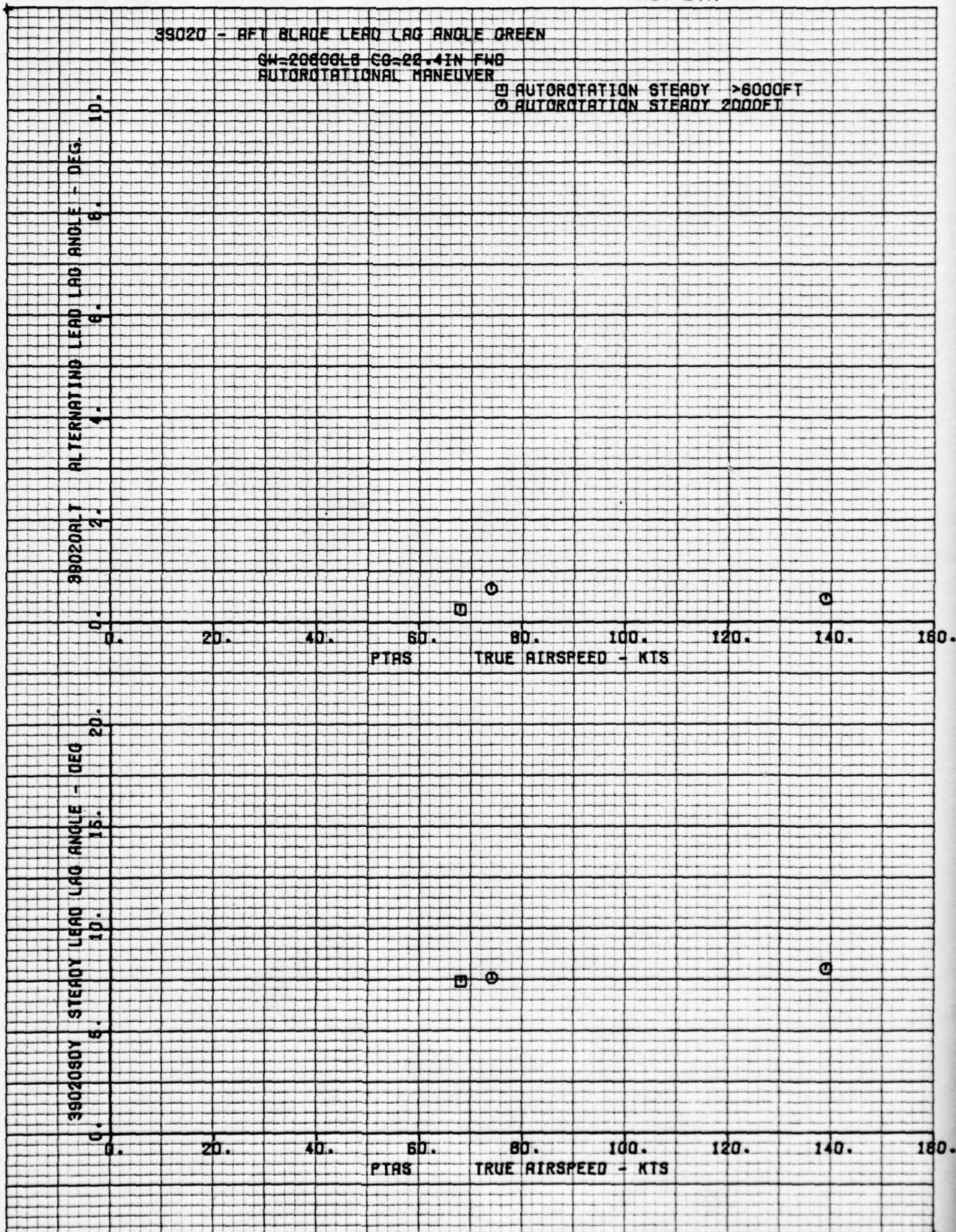


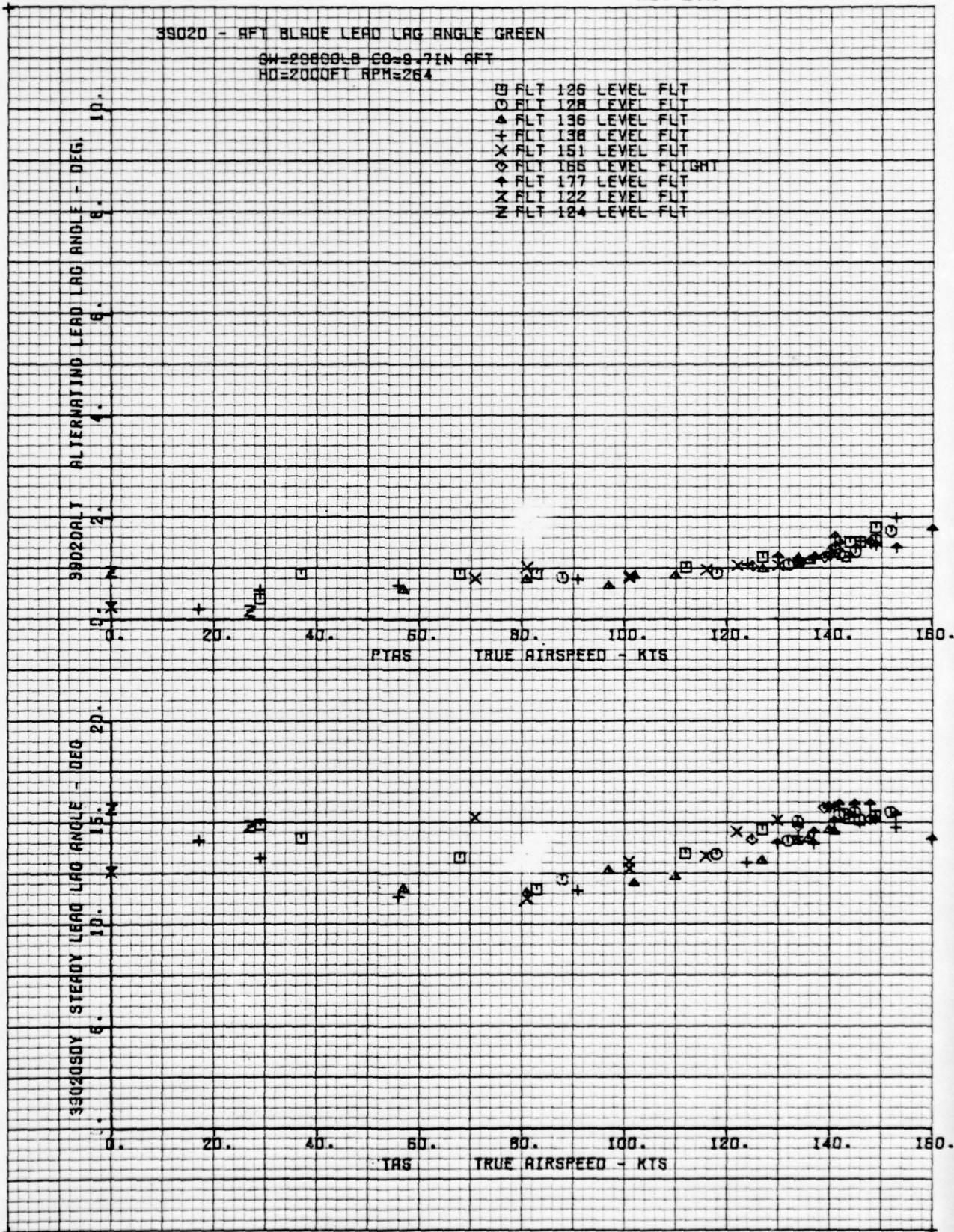
D210-11168-3

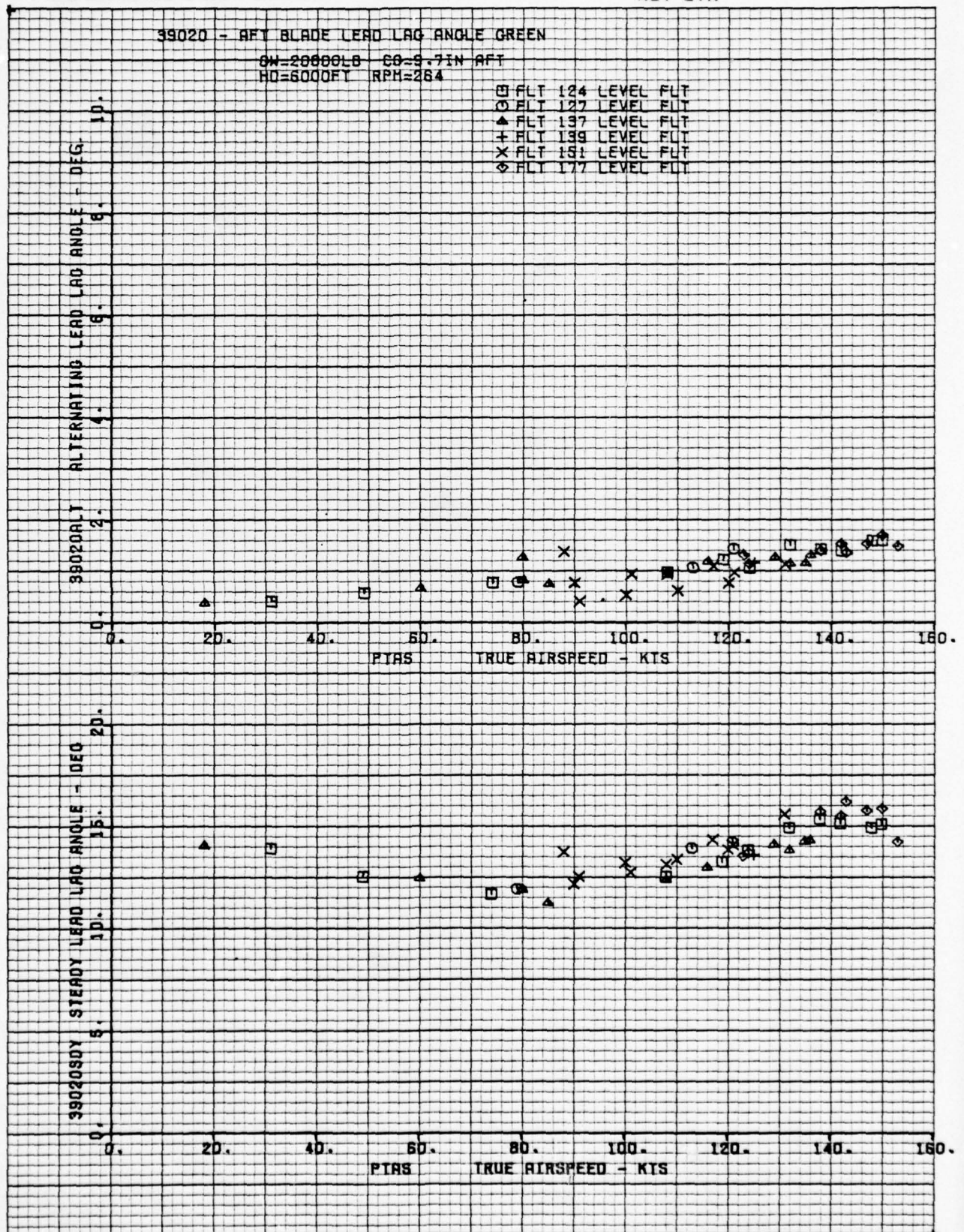
NUMBER 1 VOLUME 4
REV LTR

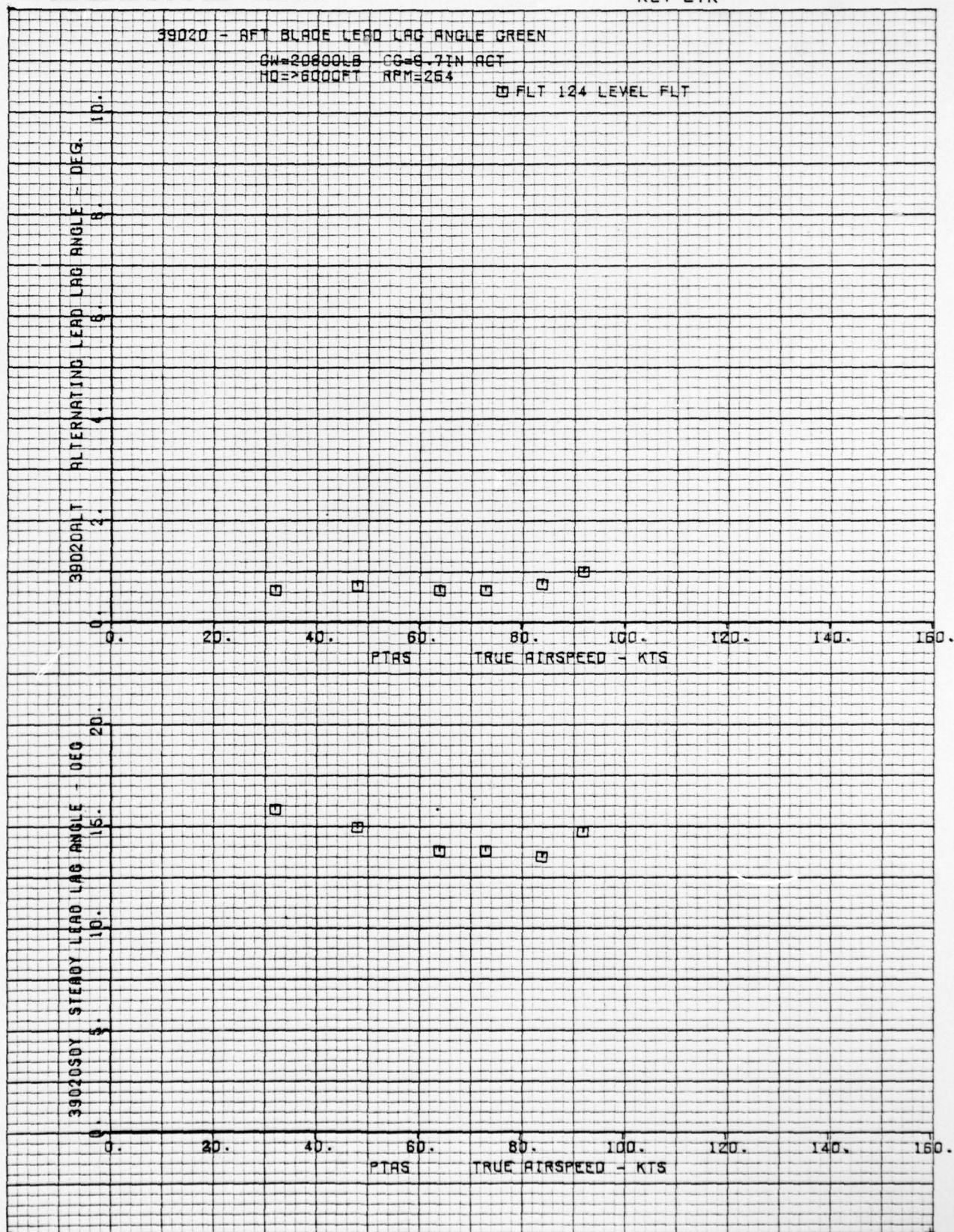
THE **BOEING** COMPANY





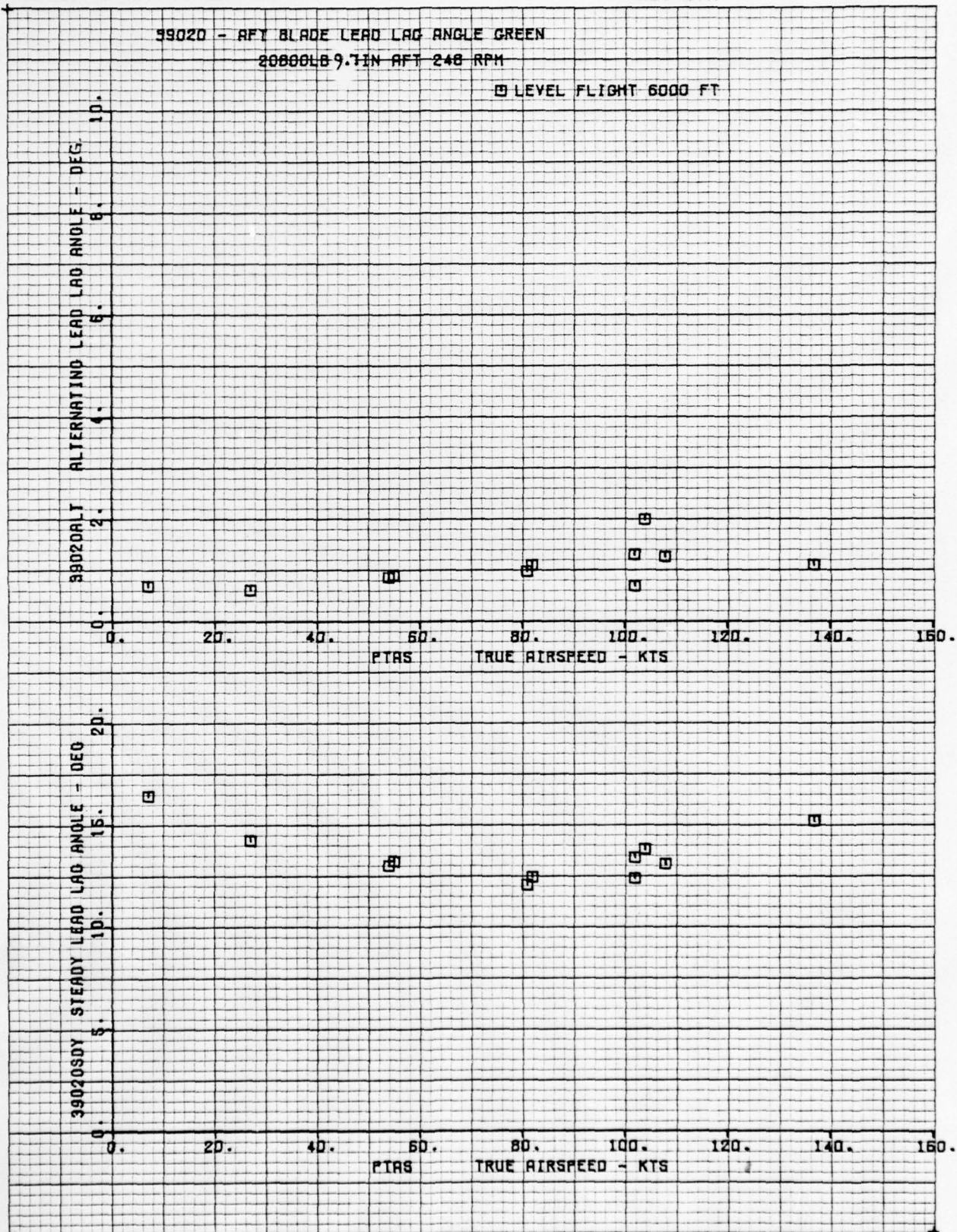




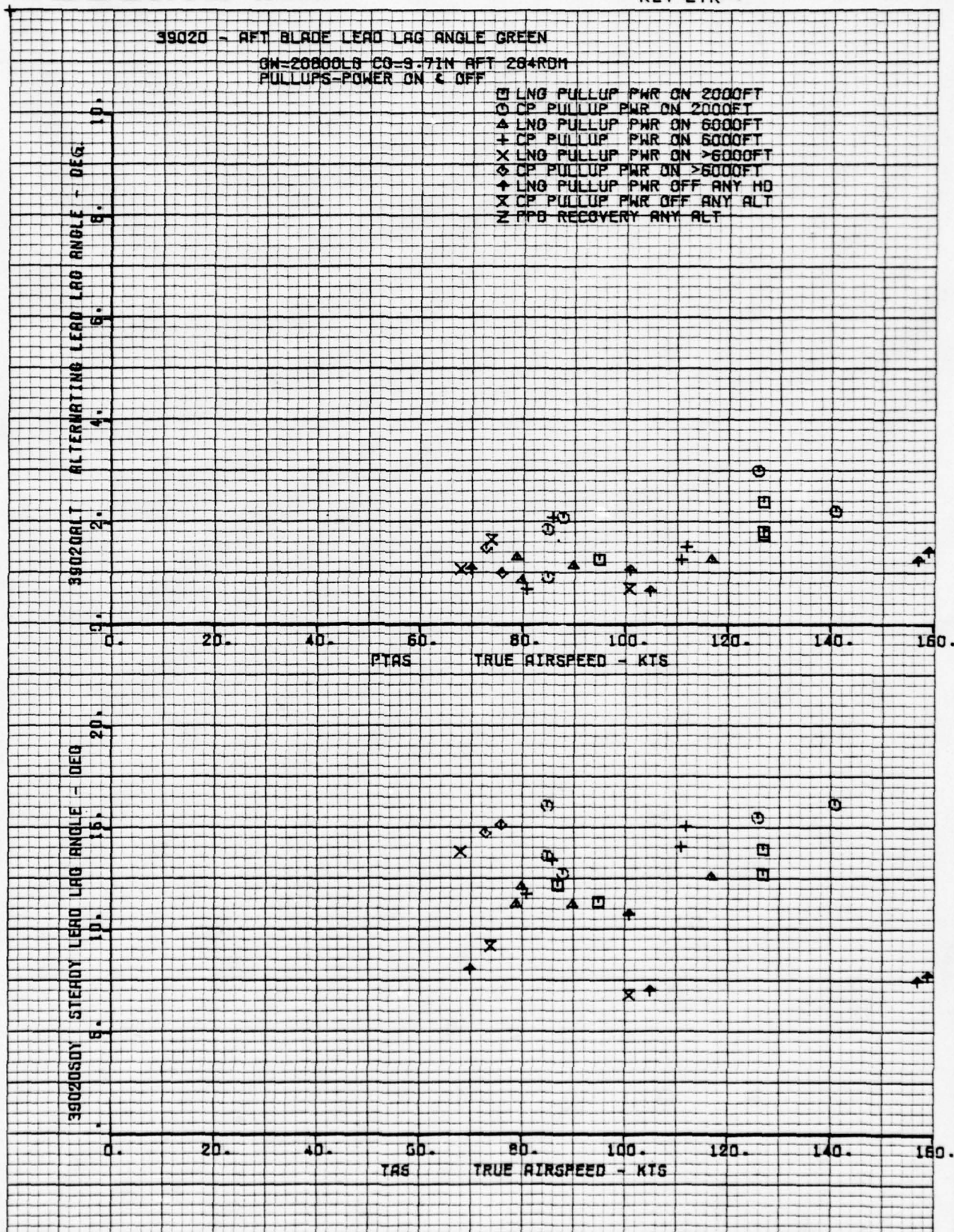


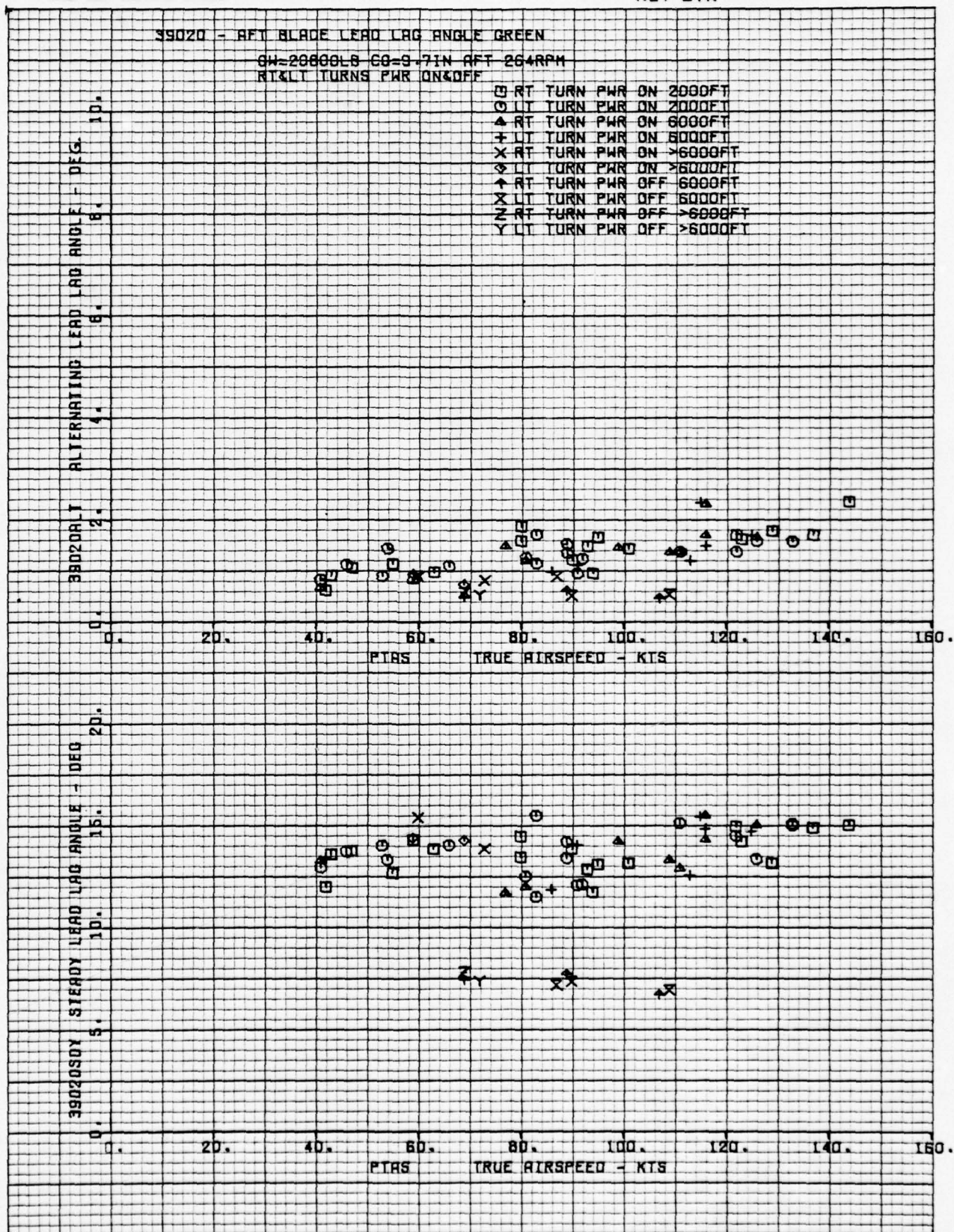
THE **BOEING** COMPANY

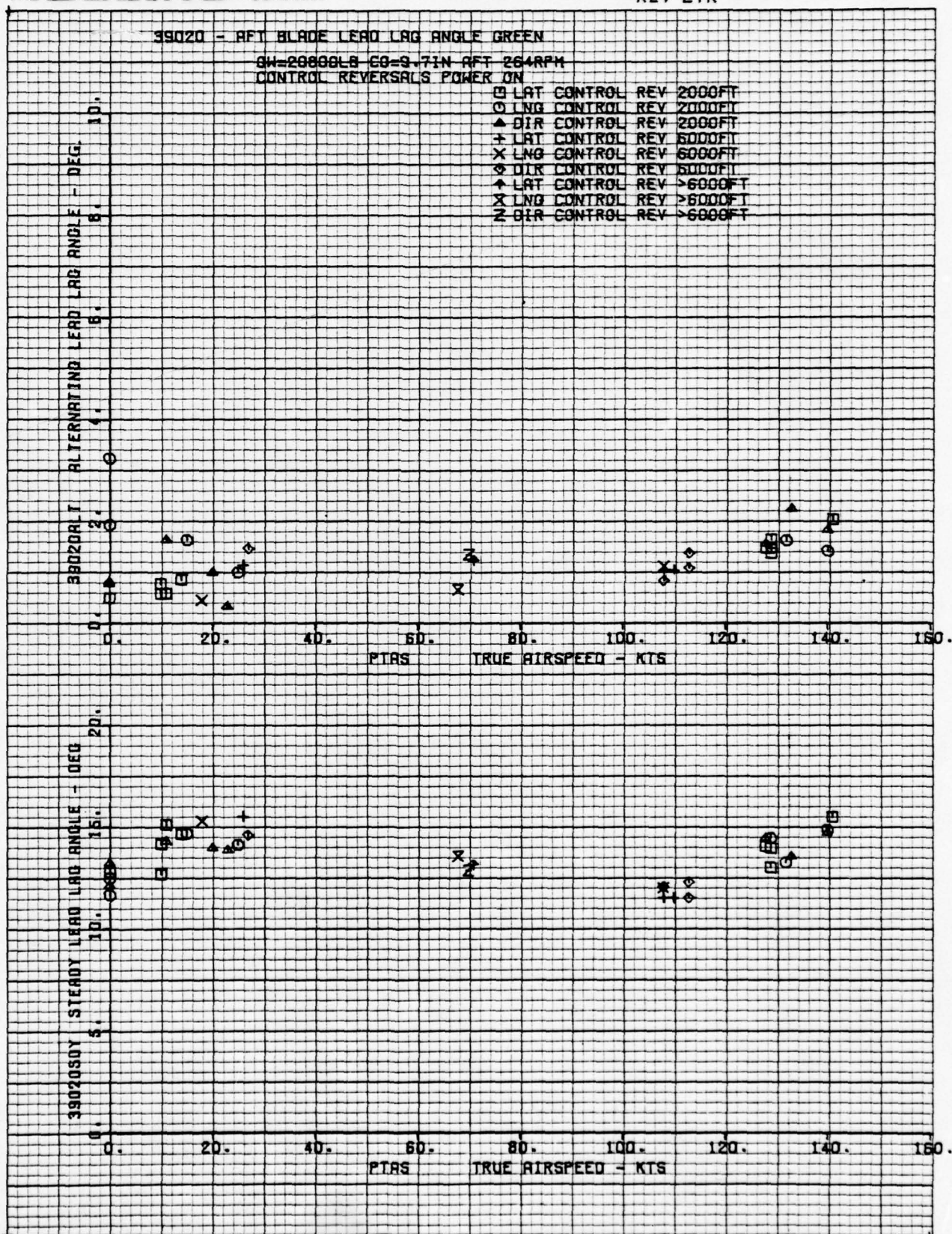
D210-11168-3
NUMBER
REV LTR
VOLUME 4

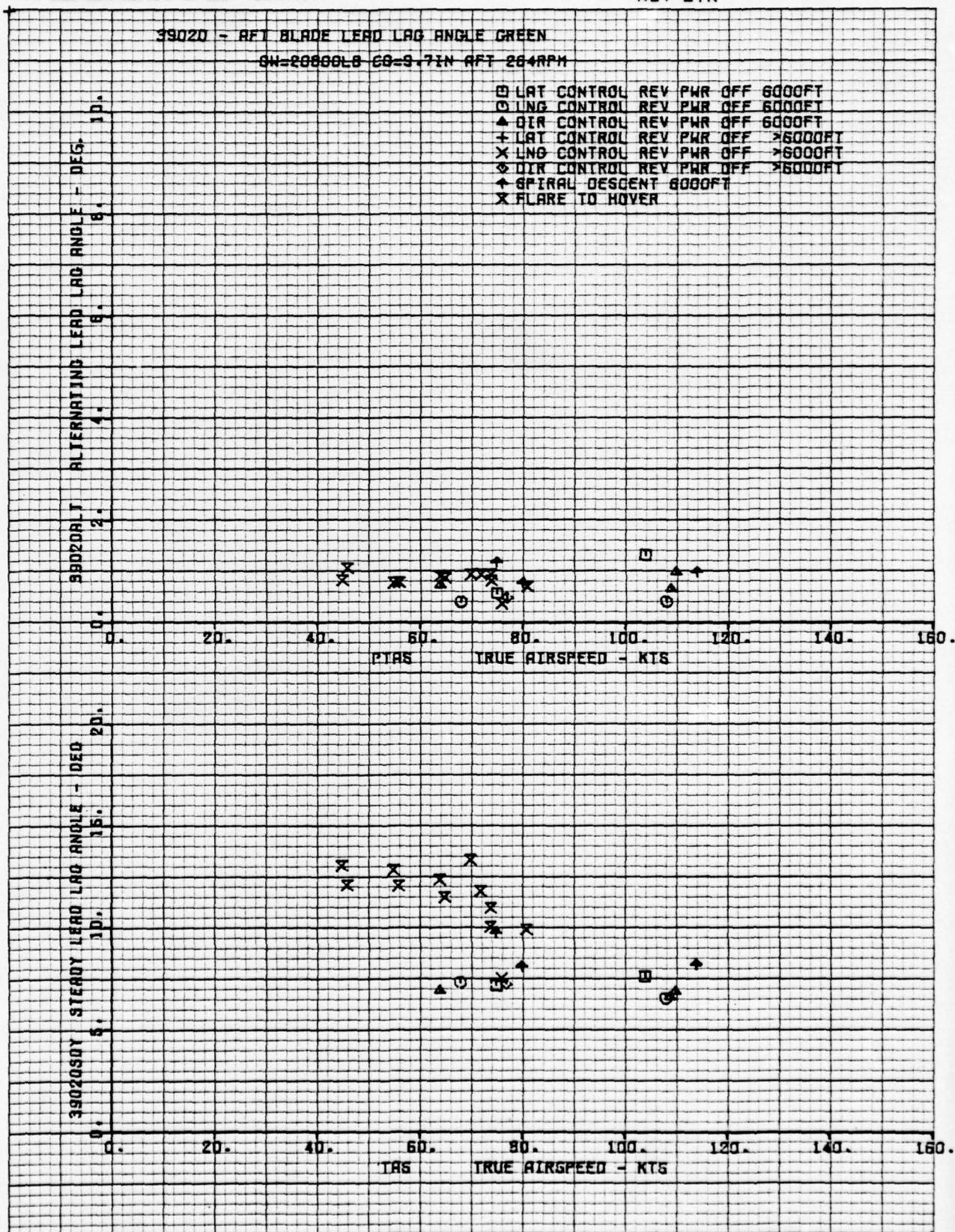


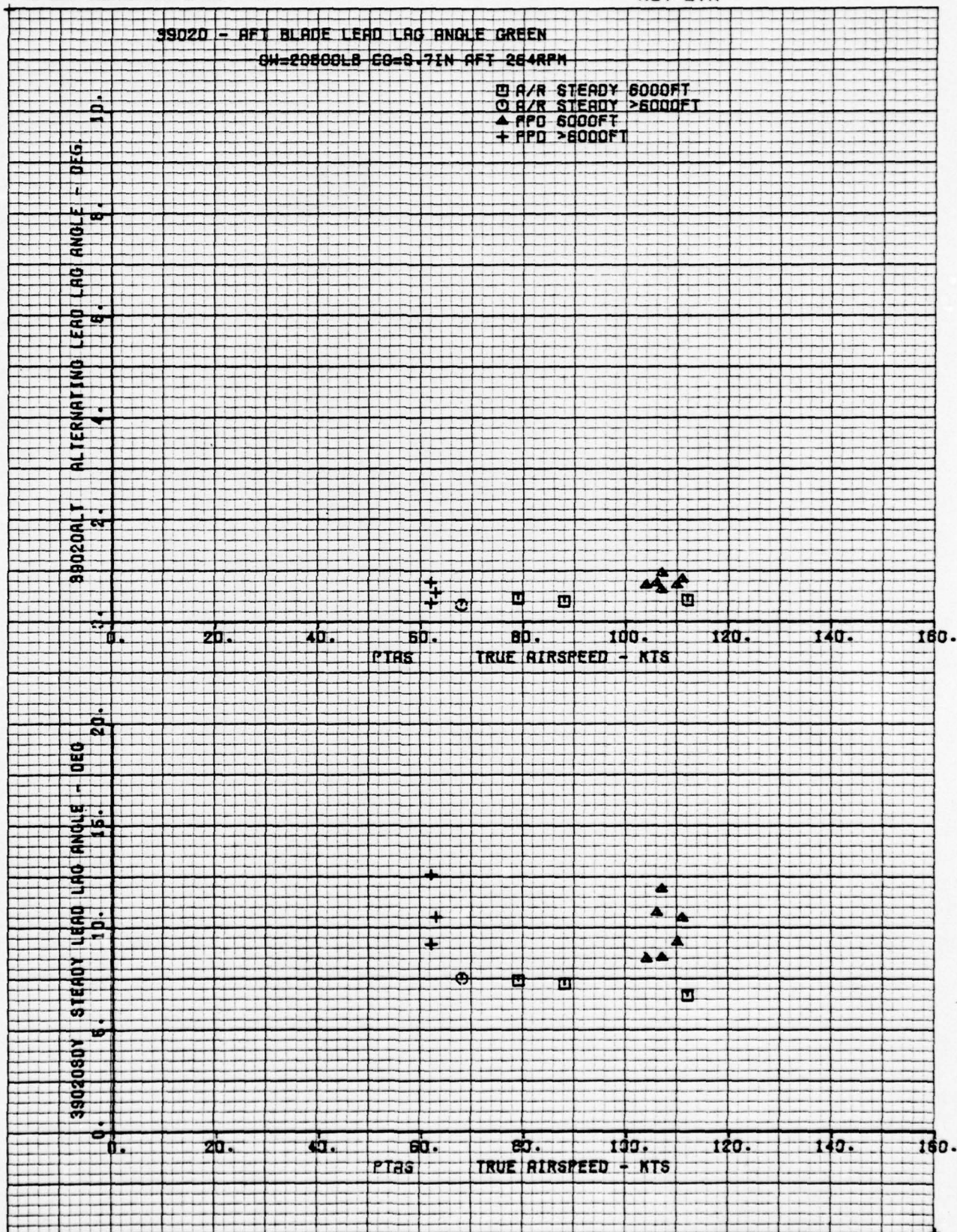
FORM 52300 (10/71)

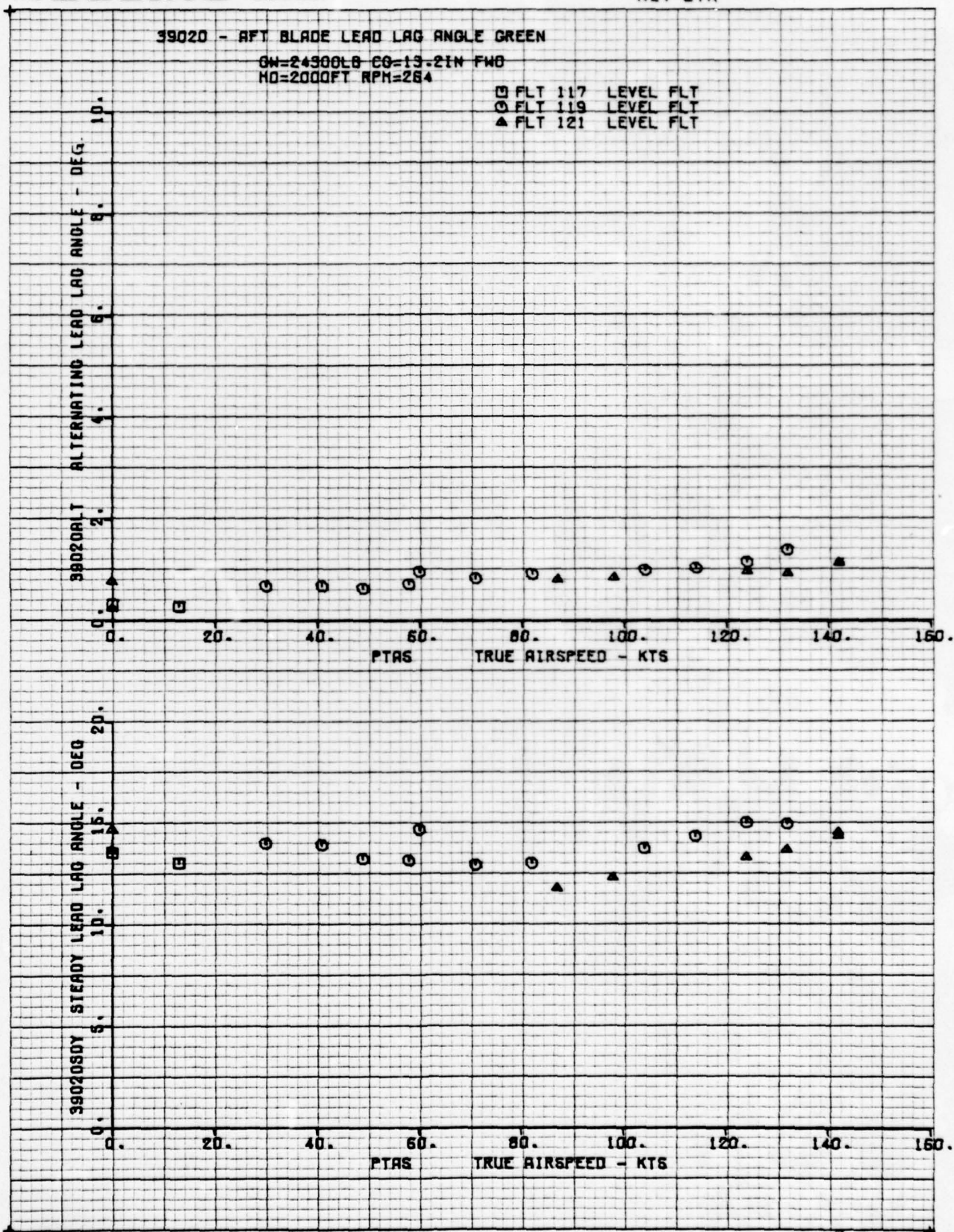








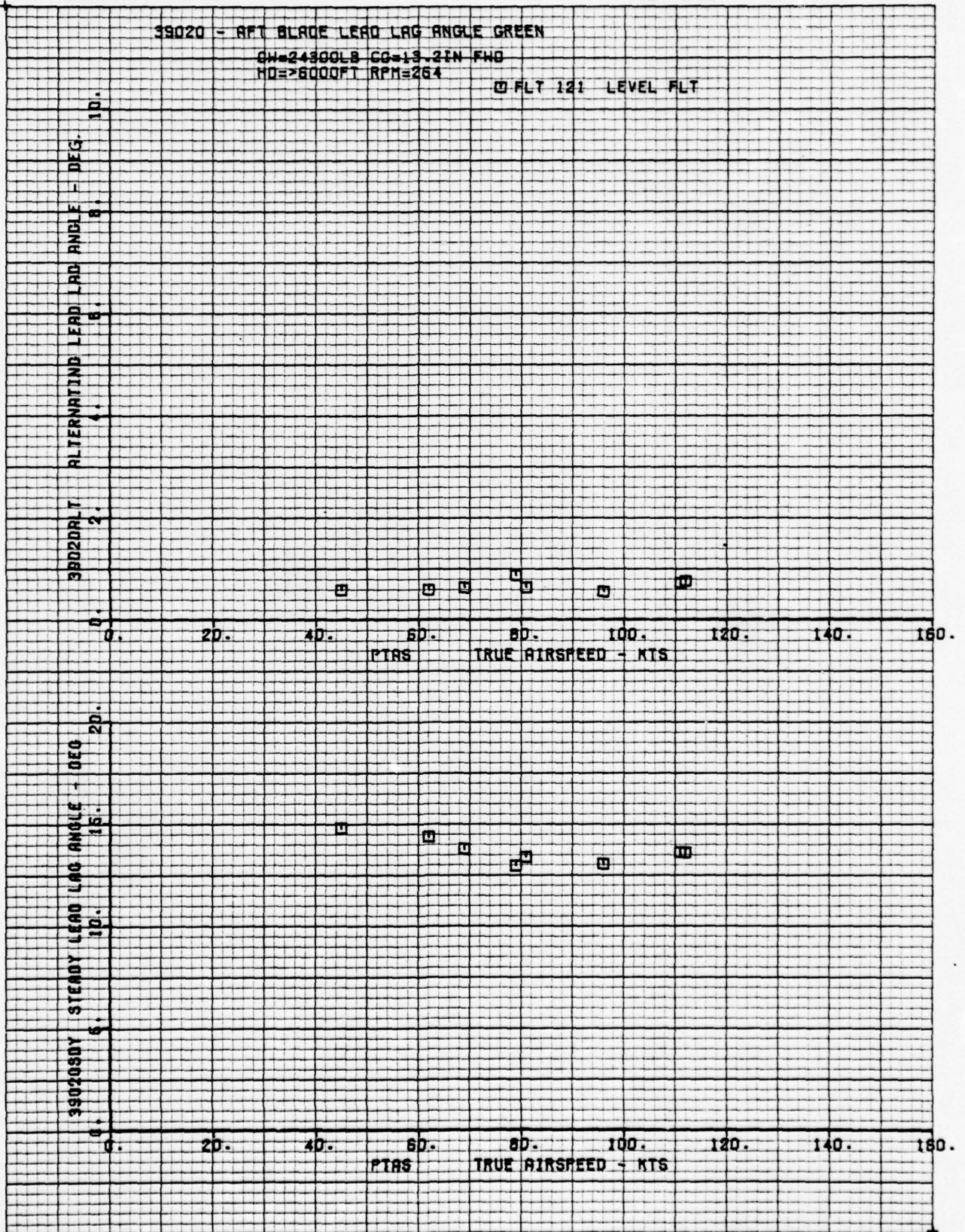




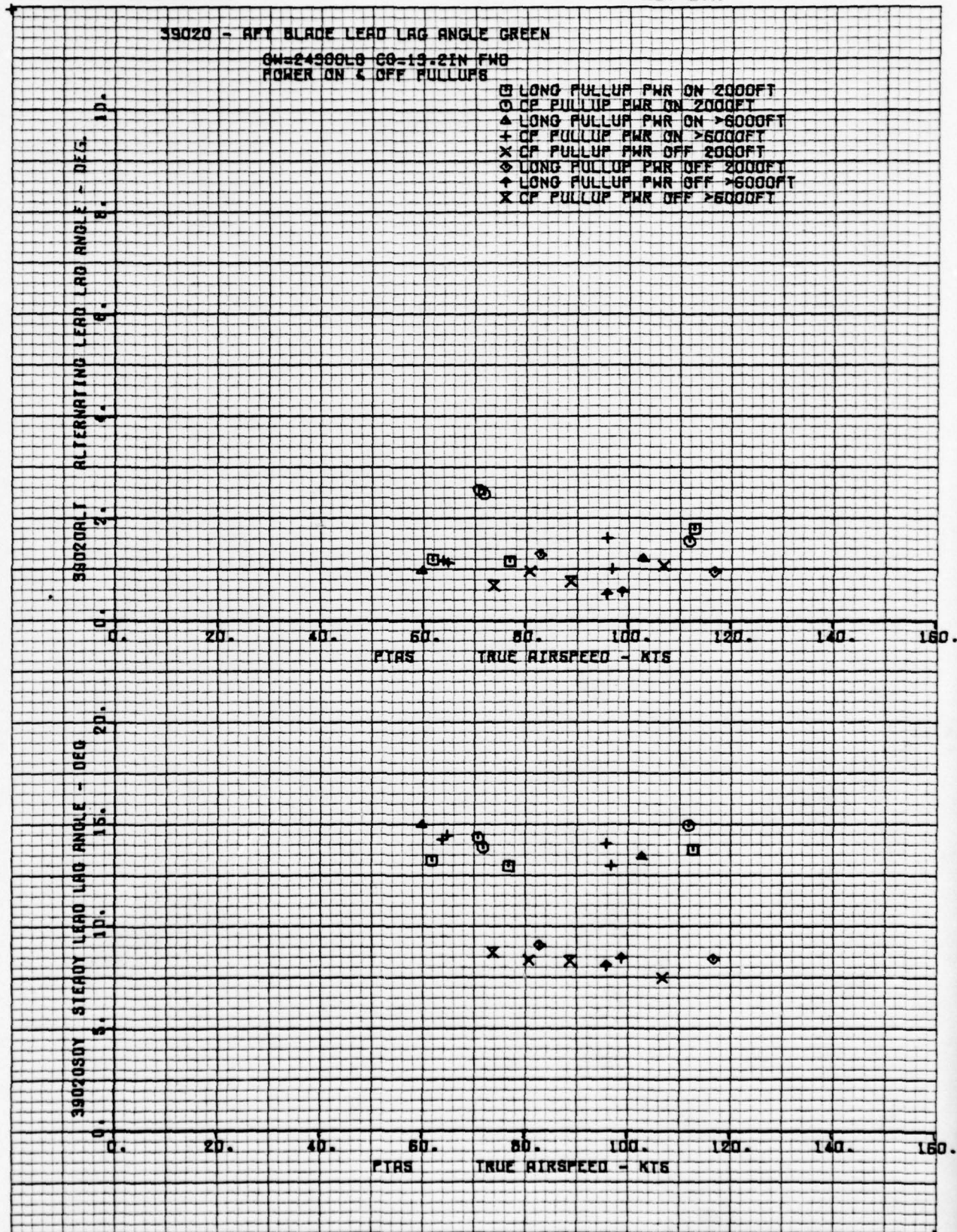
THE **BOEING** COMPANY

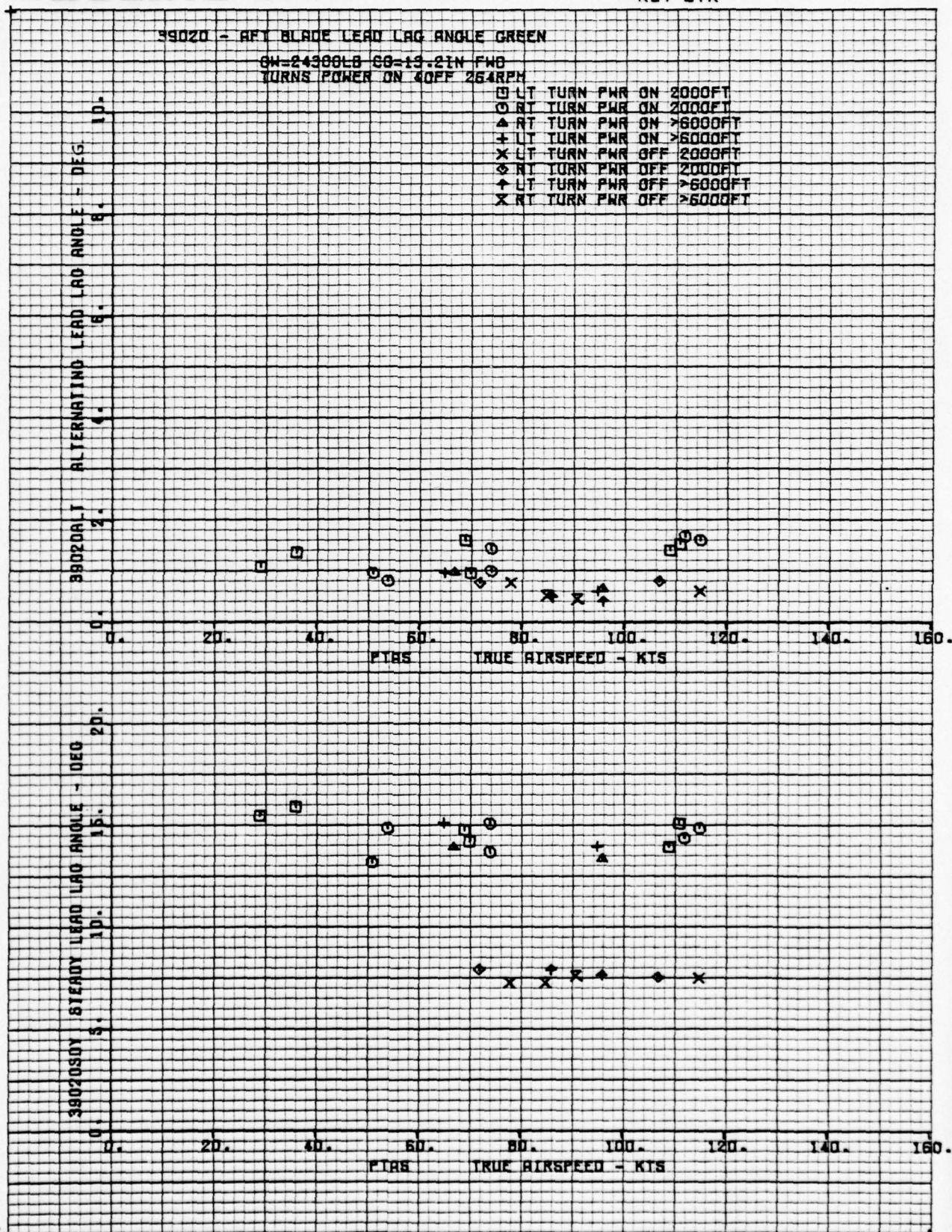
D210-11168-3

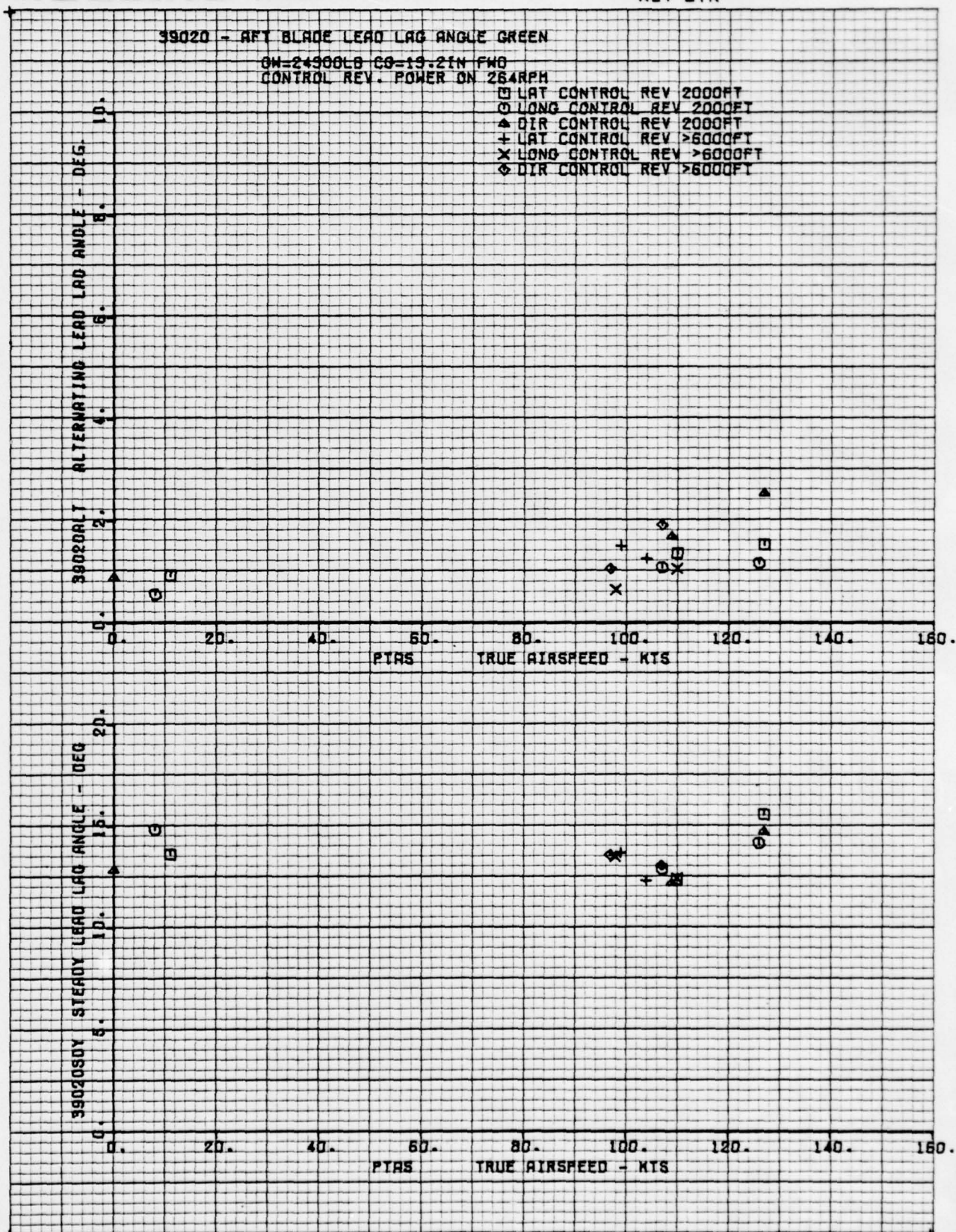
NUMBER 1 VOLUME 4
REV LTR



FORM 52300 (10/71)





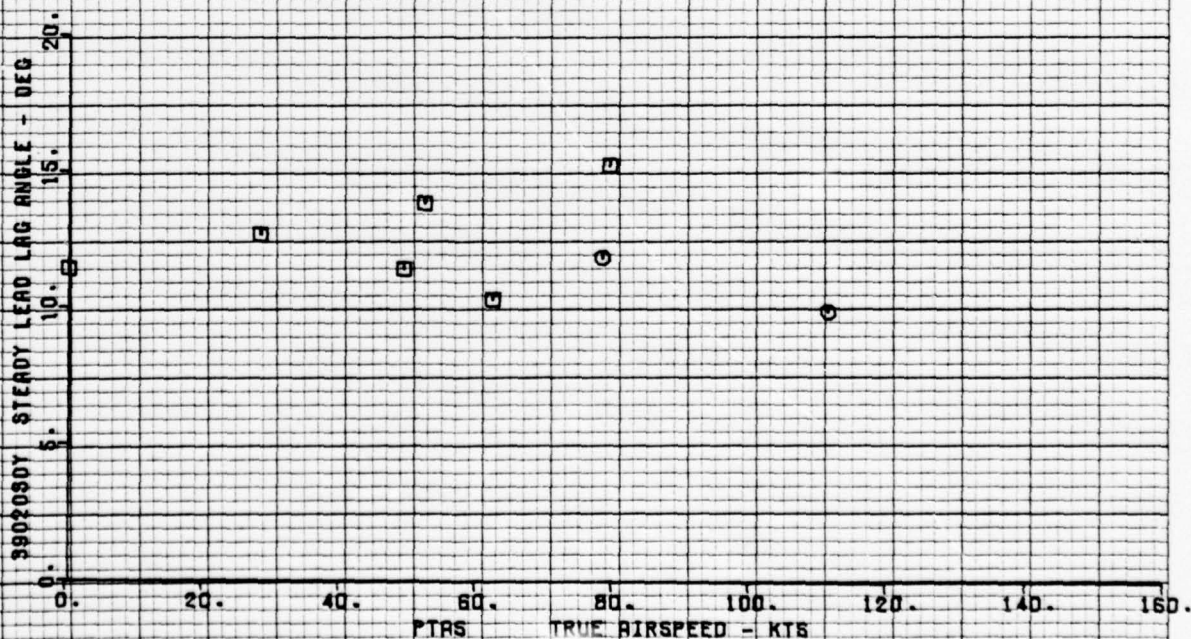
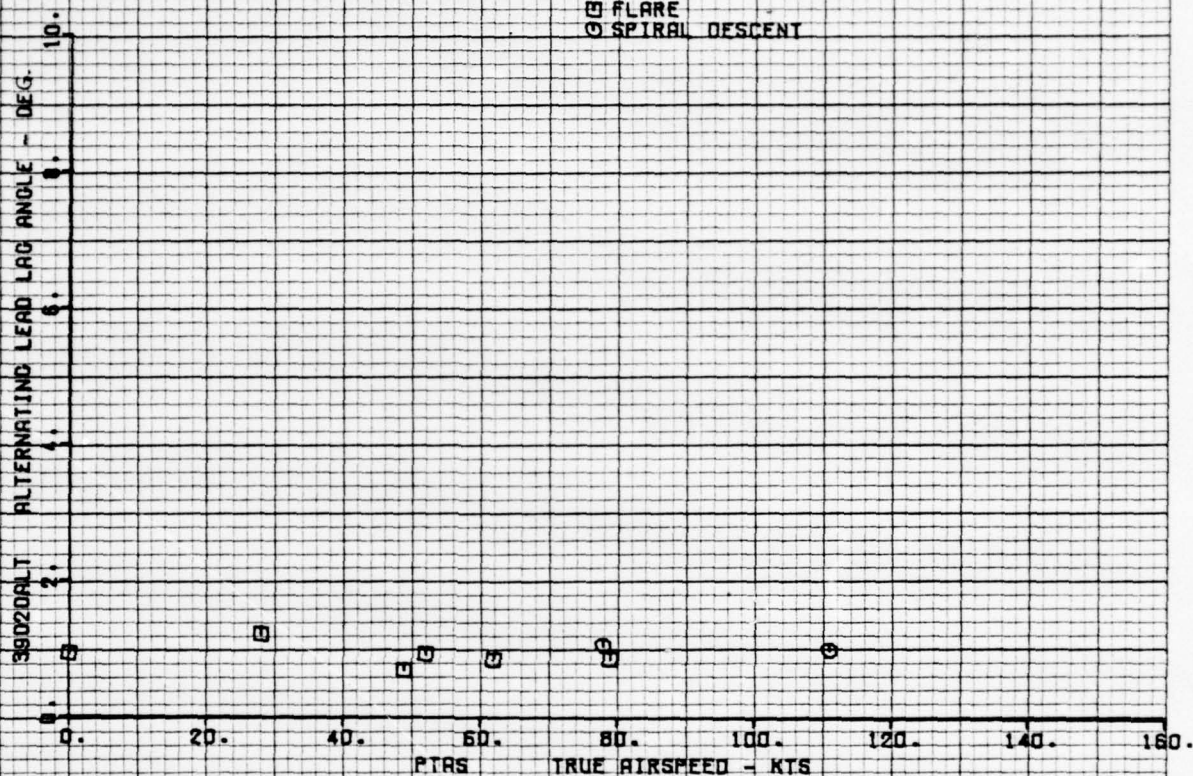


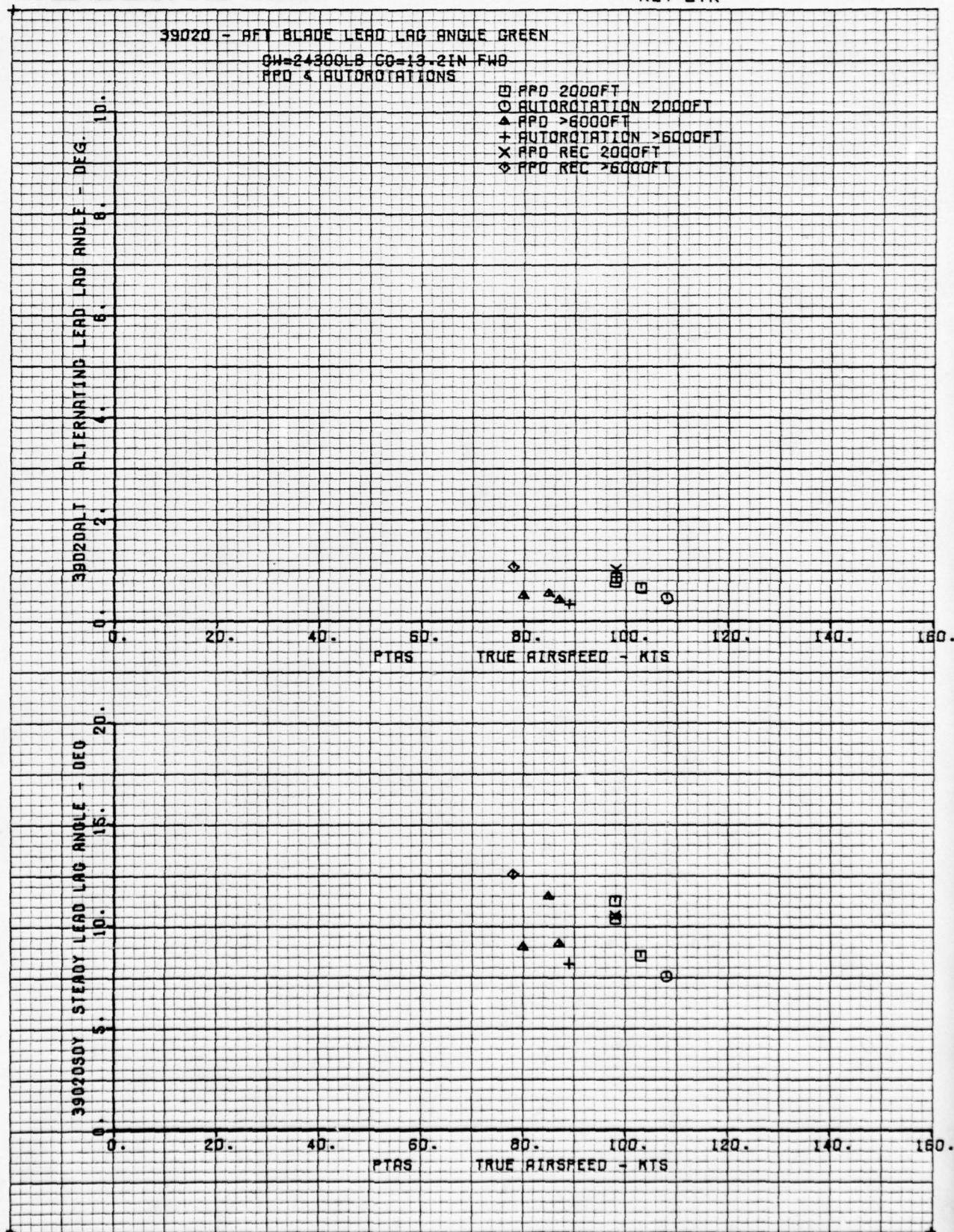
THE **BOEING** COMPANY

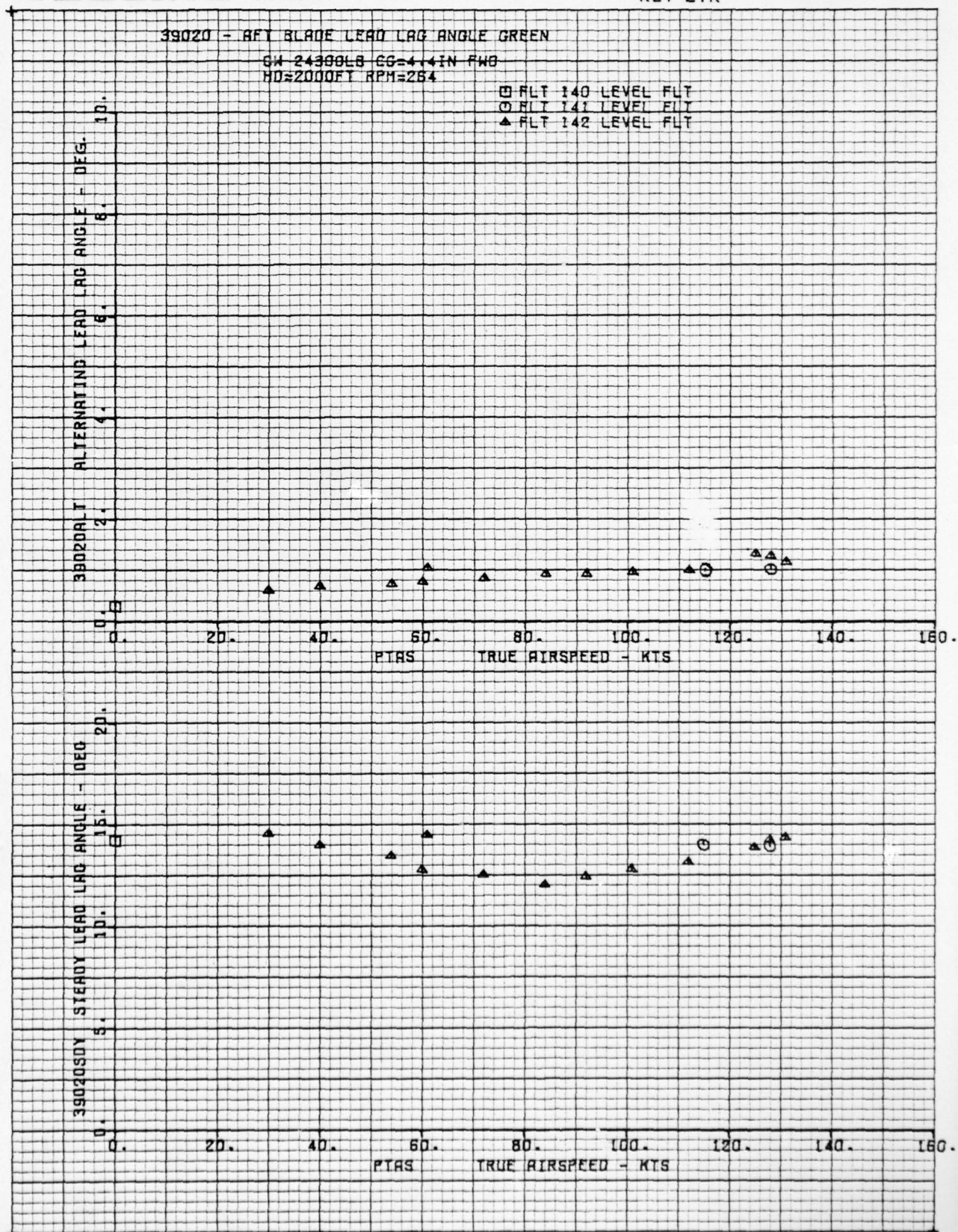
39020 - AFT BLADE LEAD LAG ANGLE GREEN

GW=24300LB CG=13.2IN FWD 264RPM

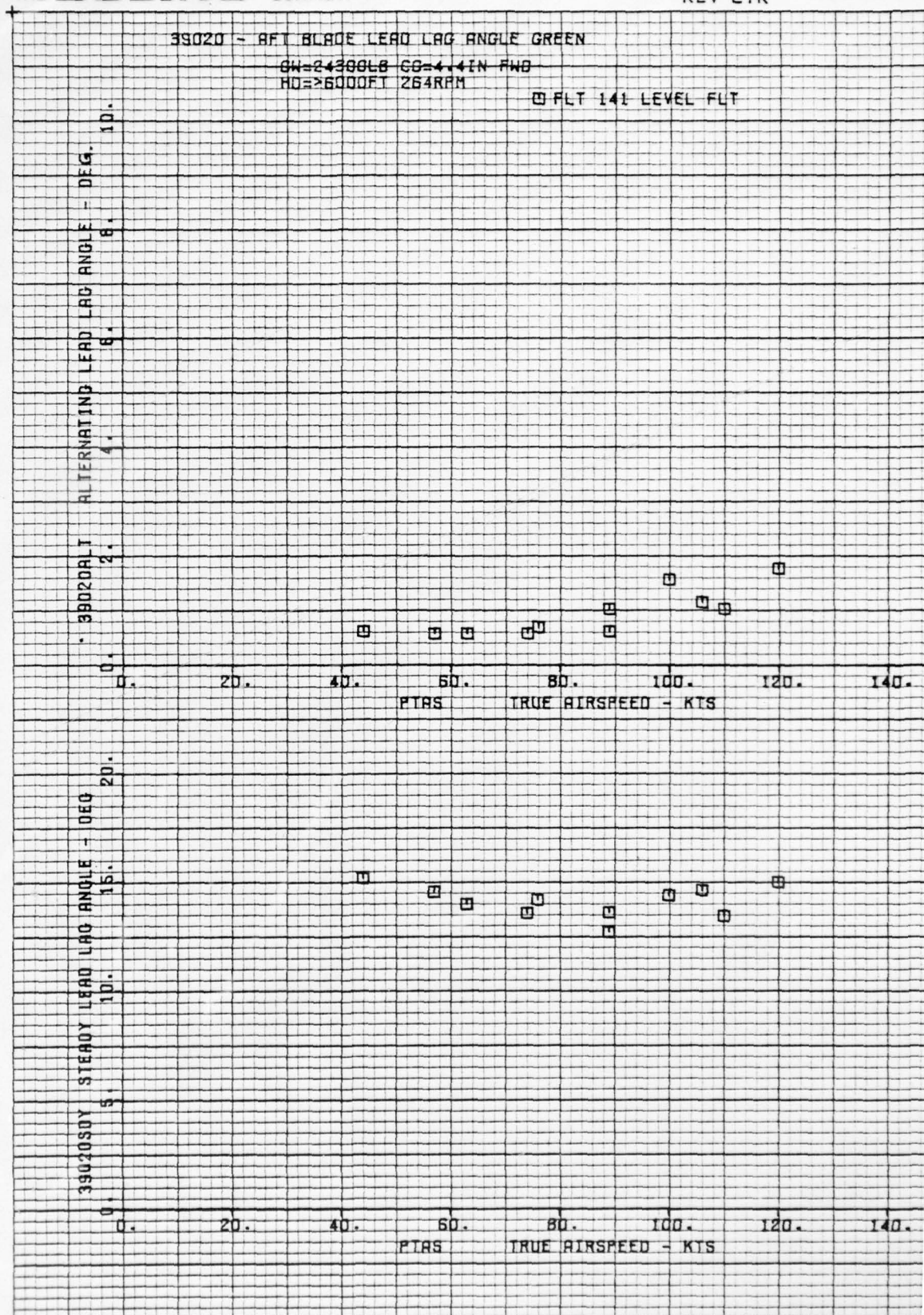
□ FLARE
○ SPIRAL DESCENT







D210-11168

NUMBER 1 VOLUME
REV LTRTHE **BOEING** COMPANY

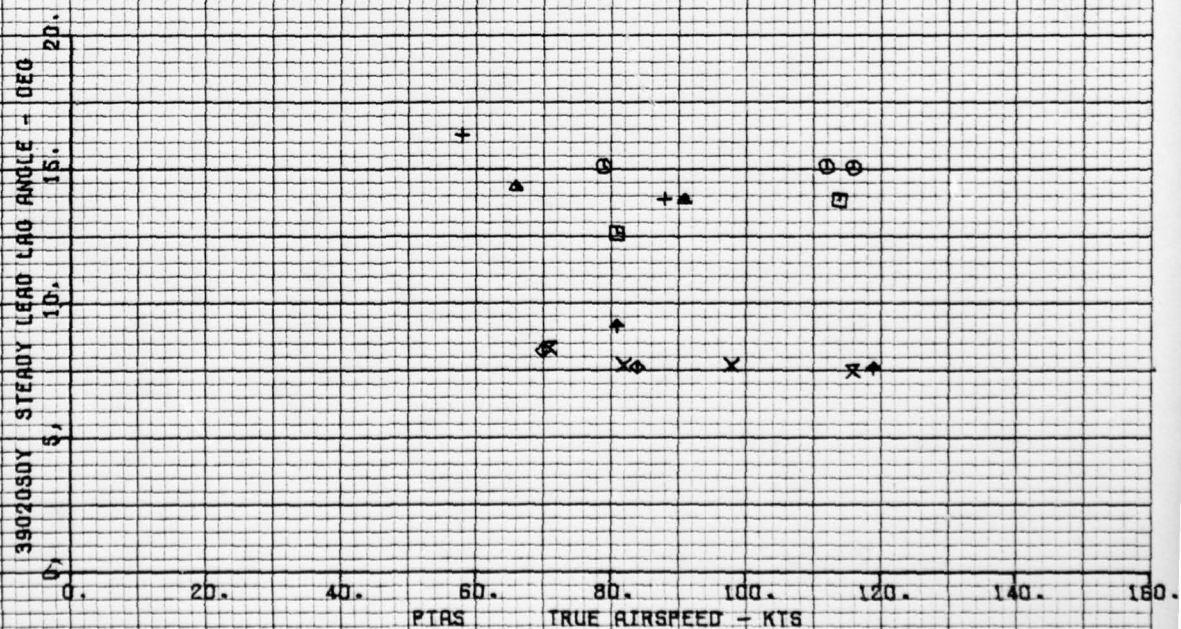
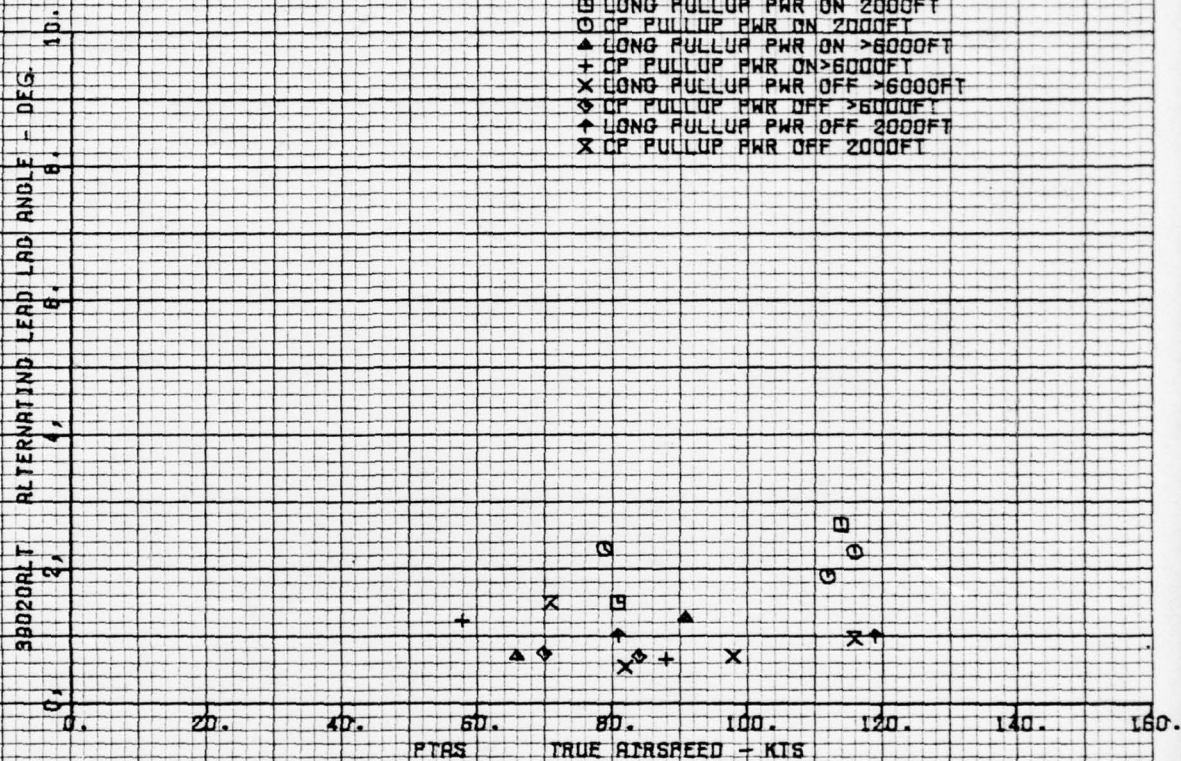
D210-11168-3

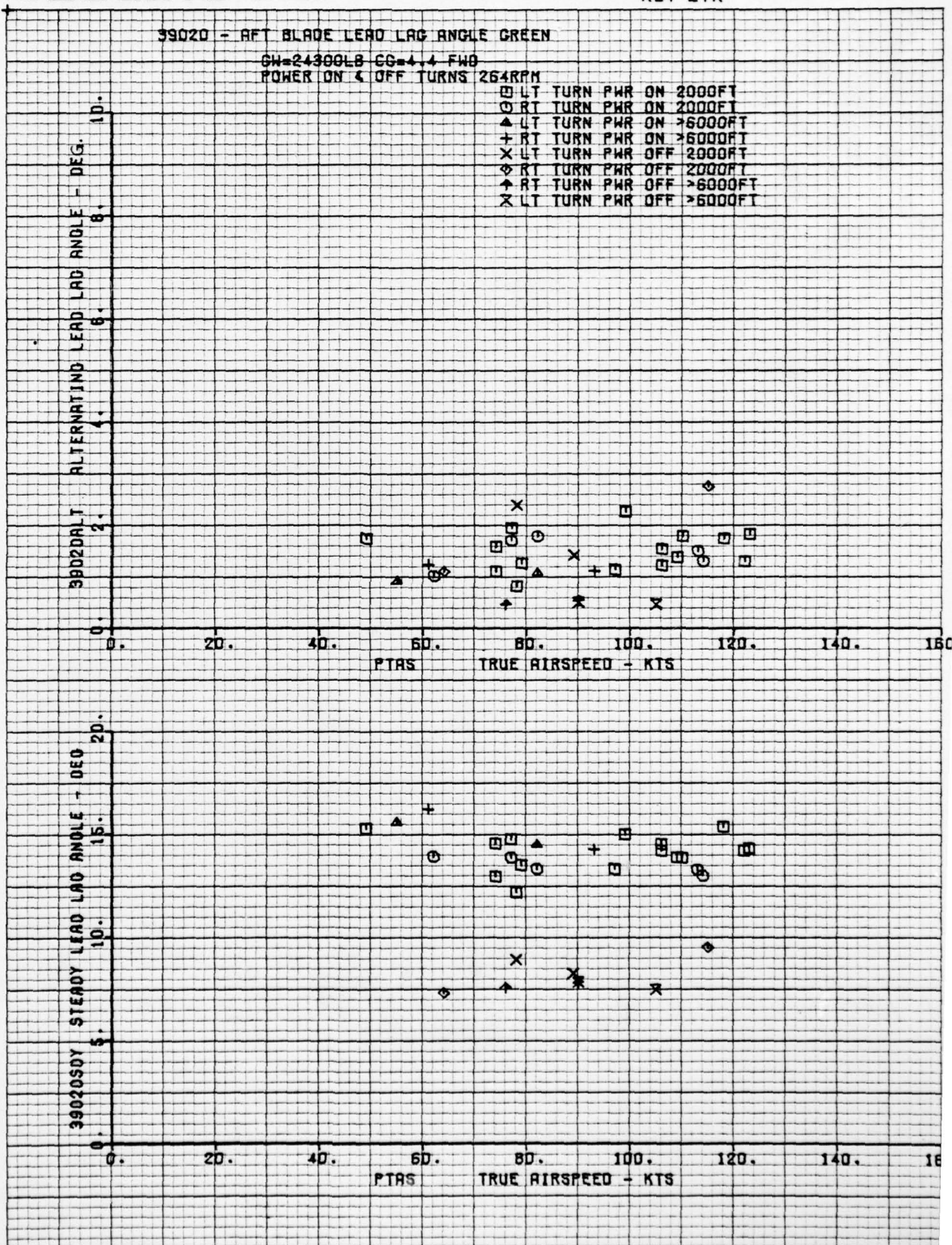
NUMBER 1 VOLUME 4
REV LTRTHE **BDEING** COMPANY

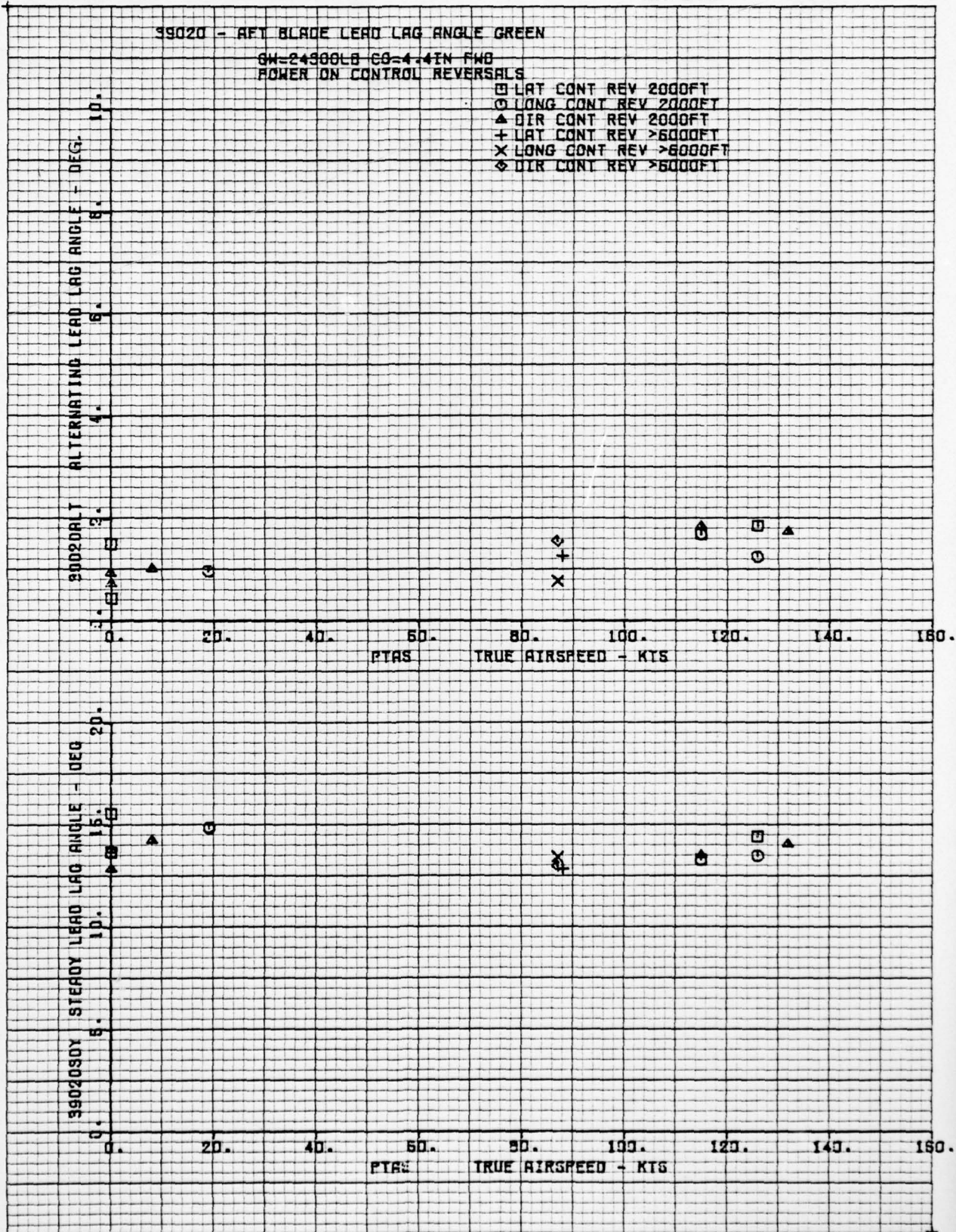
39020 - AFT BLADE LEAD LAG ANGLE GREEN

GW=24900LB CG=4.4 FWD 264RPM
PULLUPS POWER ON & OFF

□ LONG PULLUP PWR ON 2000FT
 ○ CP PULLUP PWR ON 2000FT
 ▲ LONG PULLUP PWR ON >6000FT
 + CP PULLUP PWR ON >6000FT
 × LONG PULLUP PWR OFF >6000FT
 ◆ CP PULLUP PWR OFF >6000FT
 ↑ LONG PULLUP PWR OFF 2000FT
 × CP PULLUP PWR OFF 2000FT

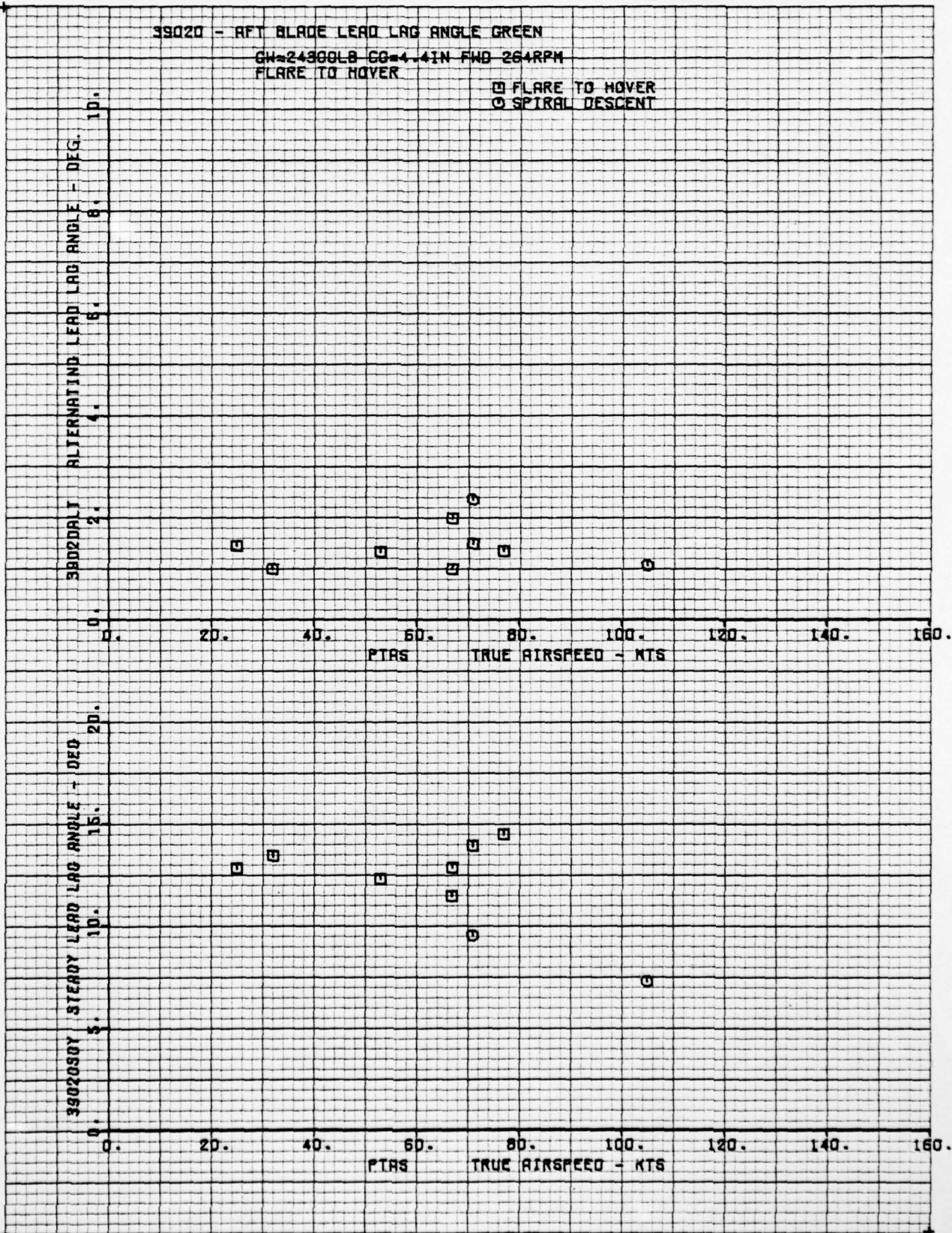


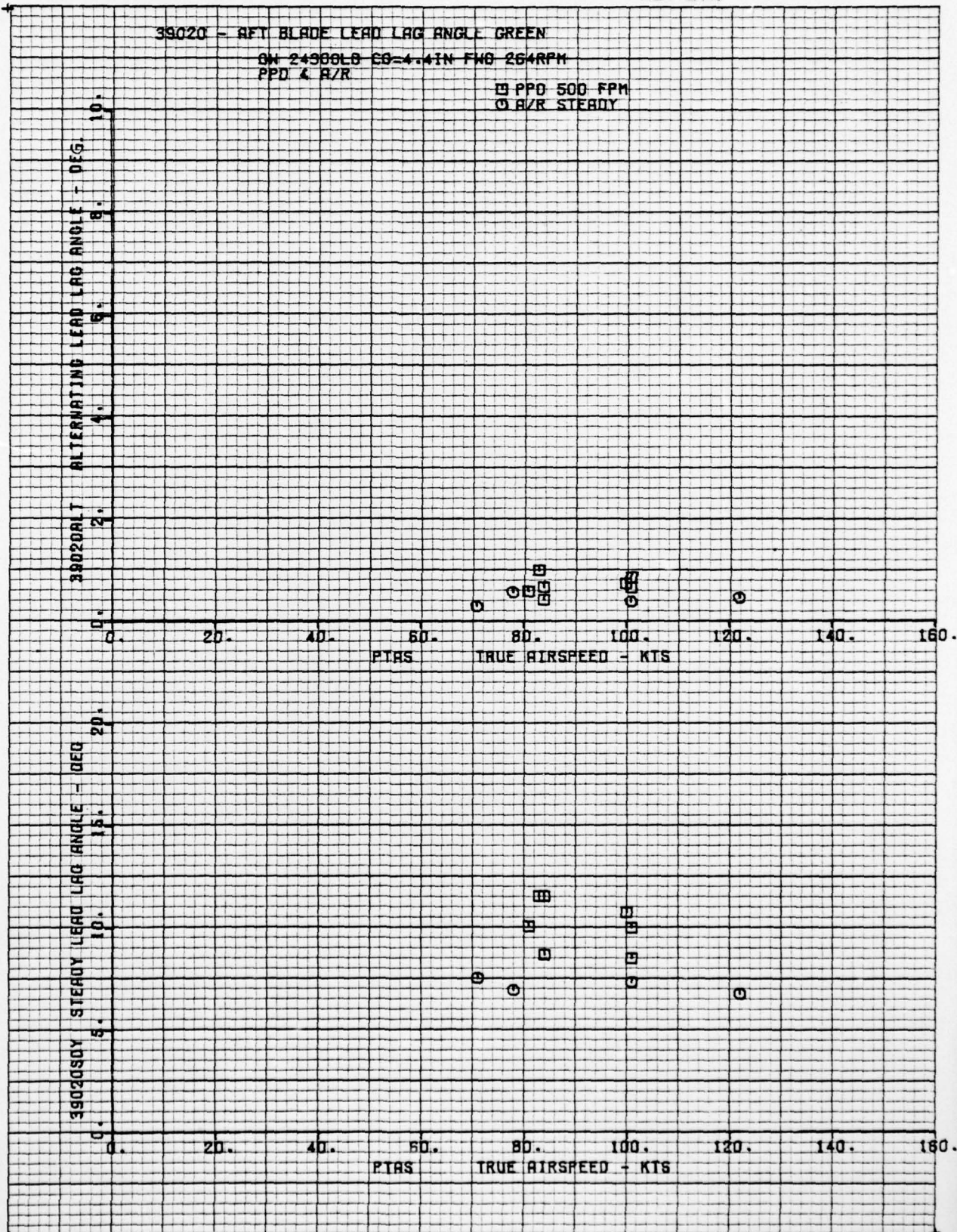




THE **BOEING** COMPANY

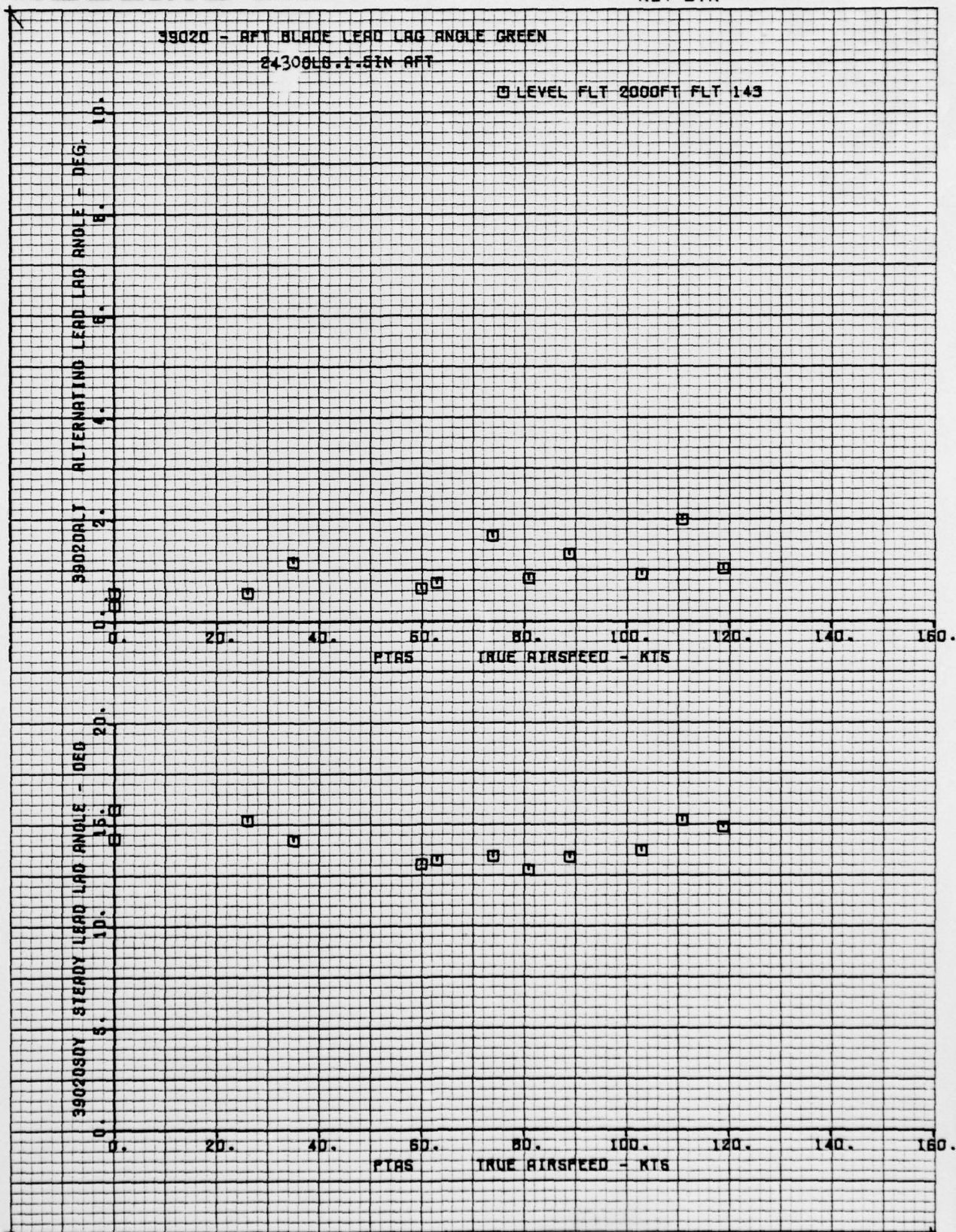
D210-11168-3
NUMBER 1 VOLUME 4
REV LTR





THE **BOEING** COMPANY

D210-11168-3
 NUMBER **VOLUME 4**
 REV LTR



THE **BOEING** COMPANY

PREPARED BY: J. Bendo

CHECKED BY:

DATE: 8/28/78

NUMBER D210-11168-3

REV LTR Volume 4

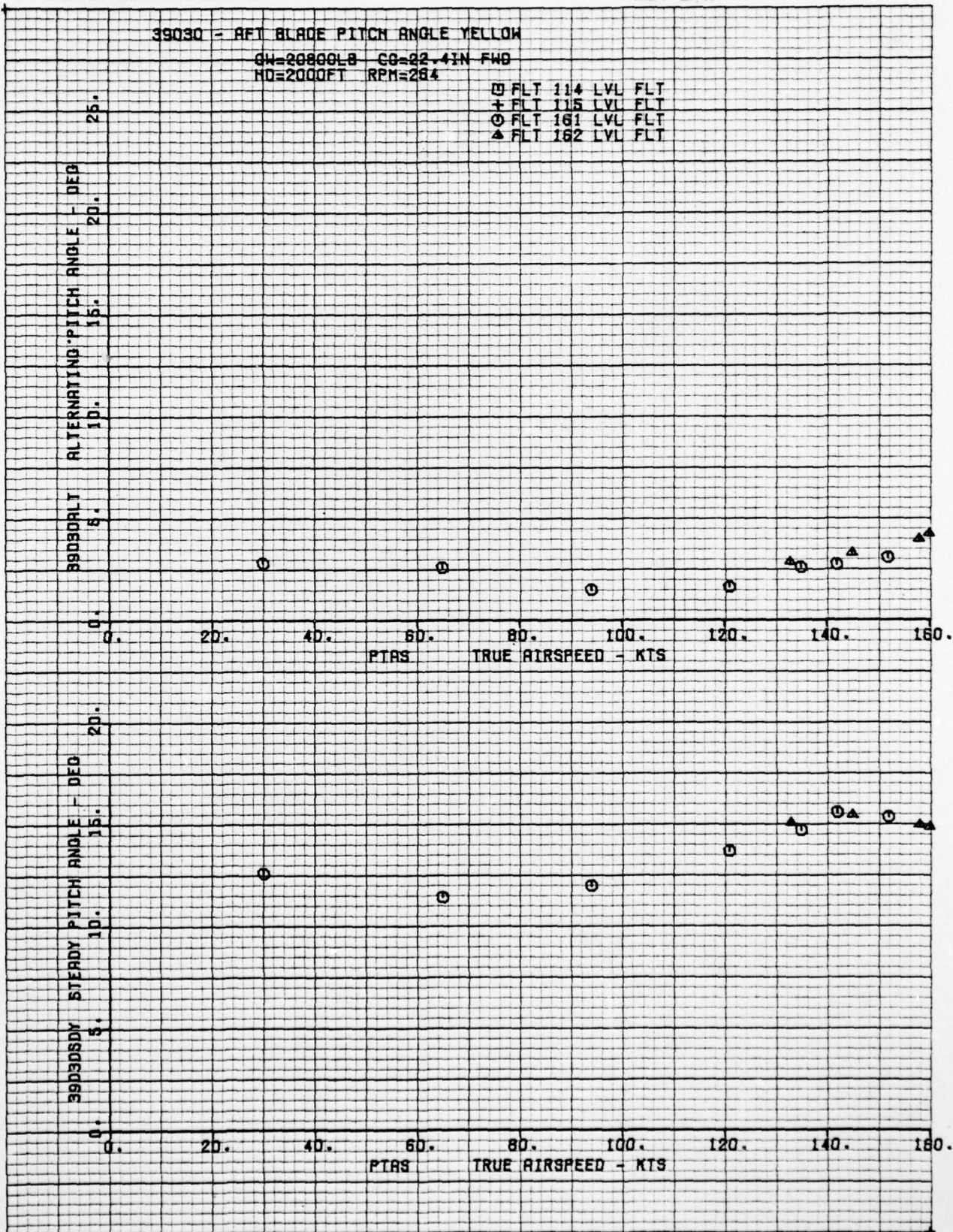
MODEL NO.

4.3 Aft Blade Pitch Angle

THE **BOEING** COMPANY

D210-11168-3

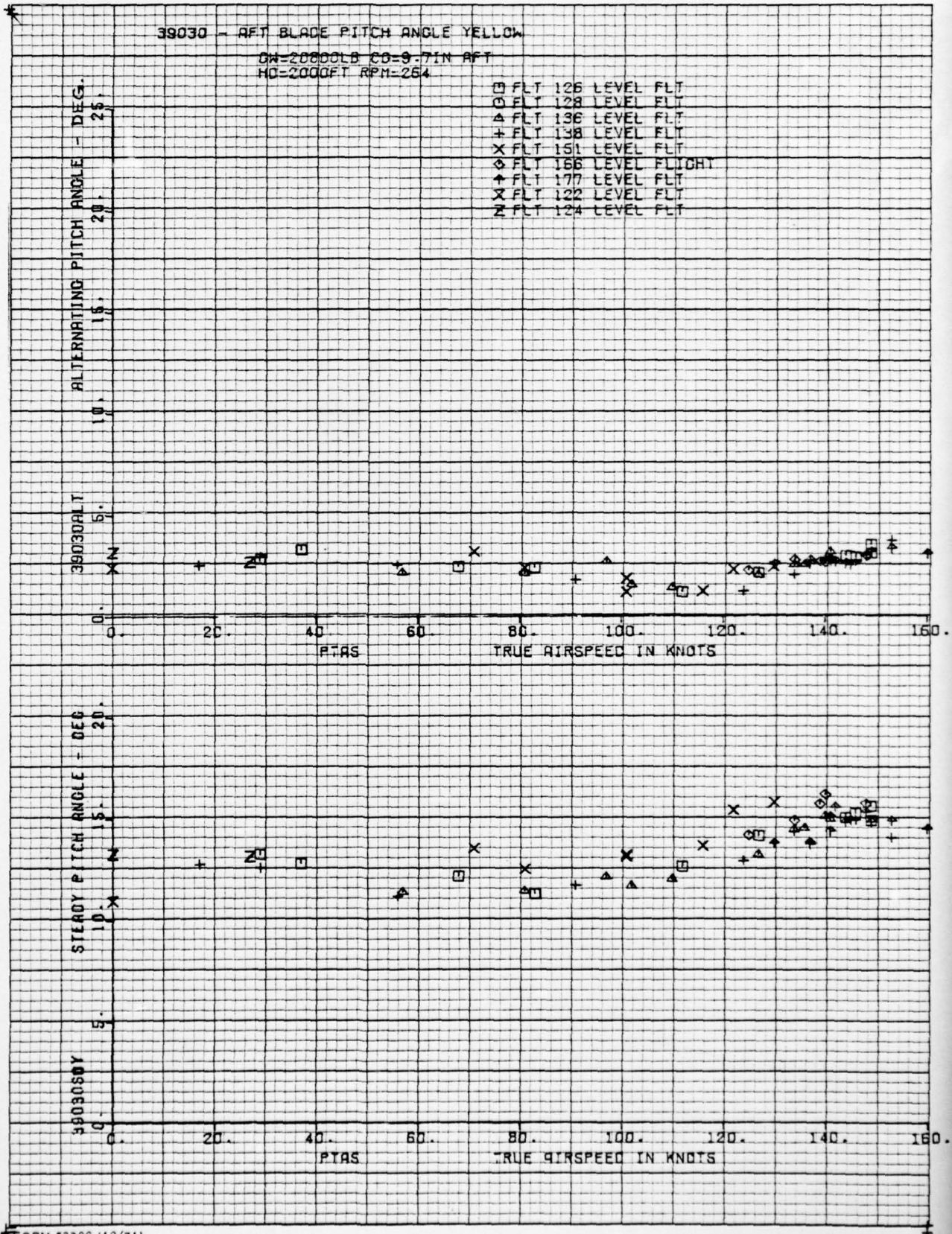
NUMBER 1 VOLUME 4
REV LTR



39030 - AFT BLADE PITCH ANGLE YELLOW

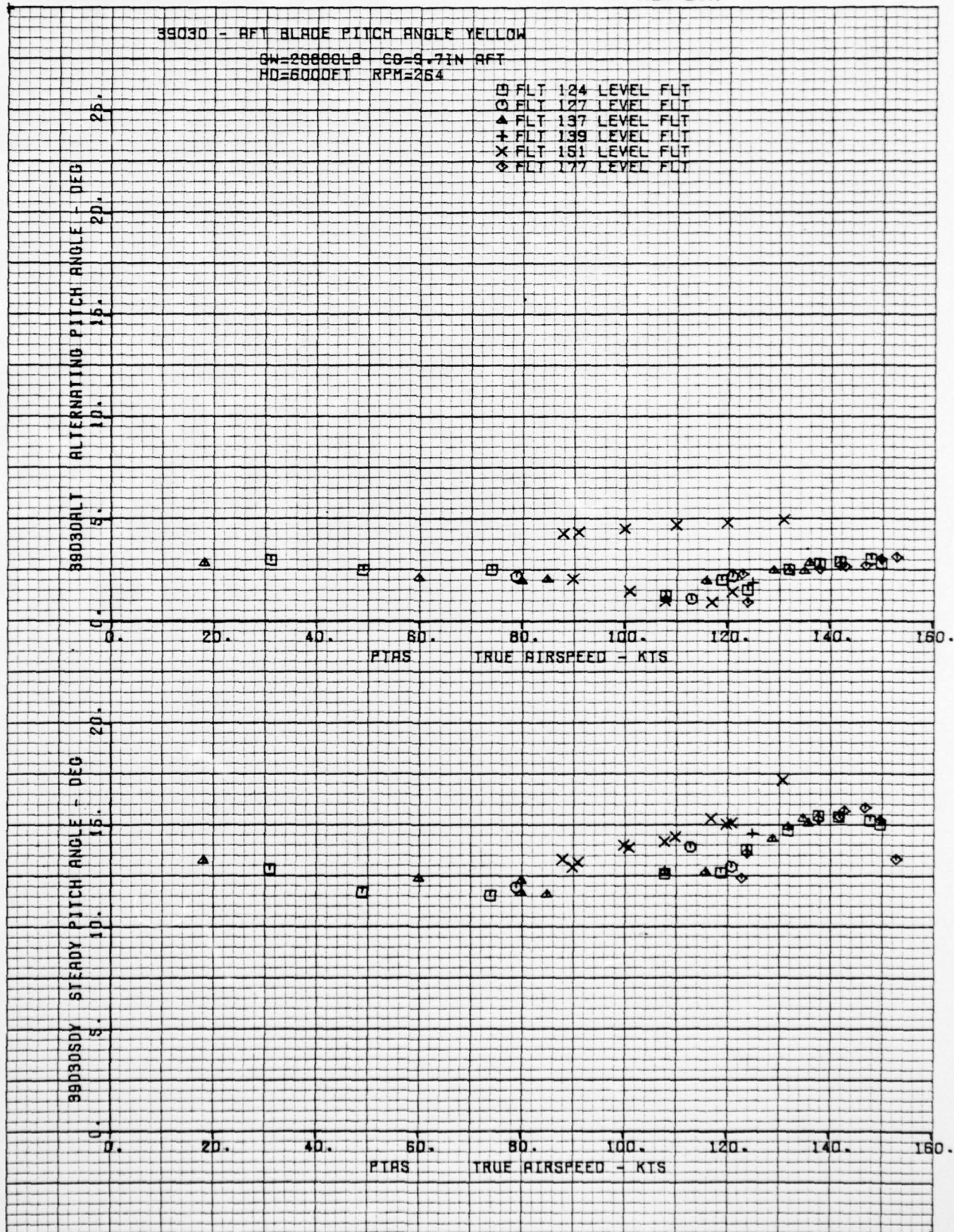
GAGE INOPERATIVE

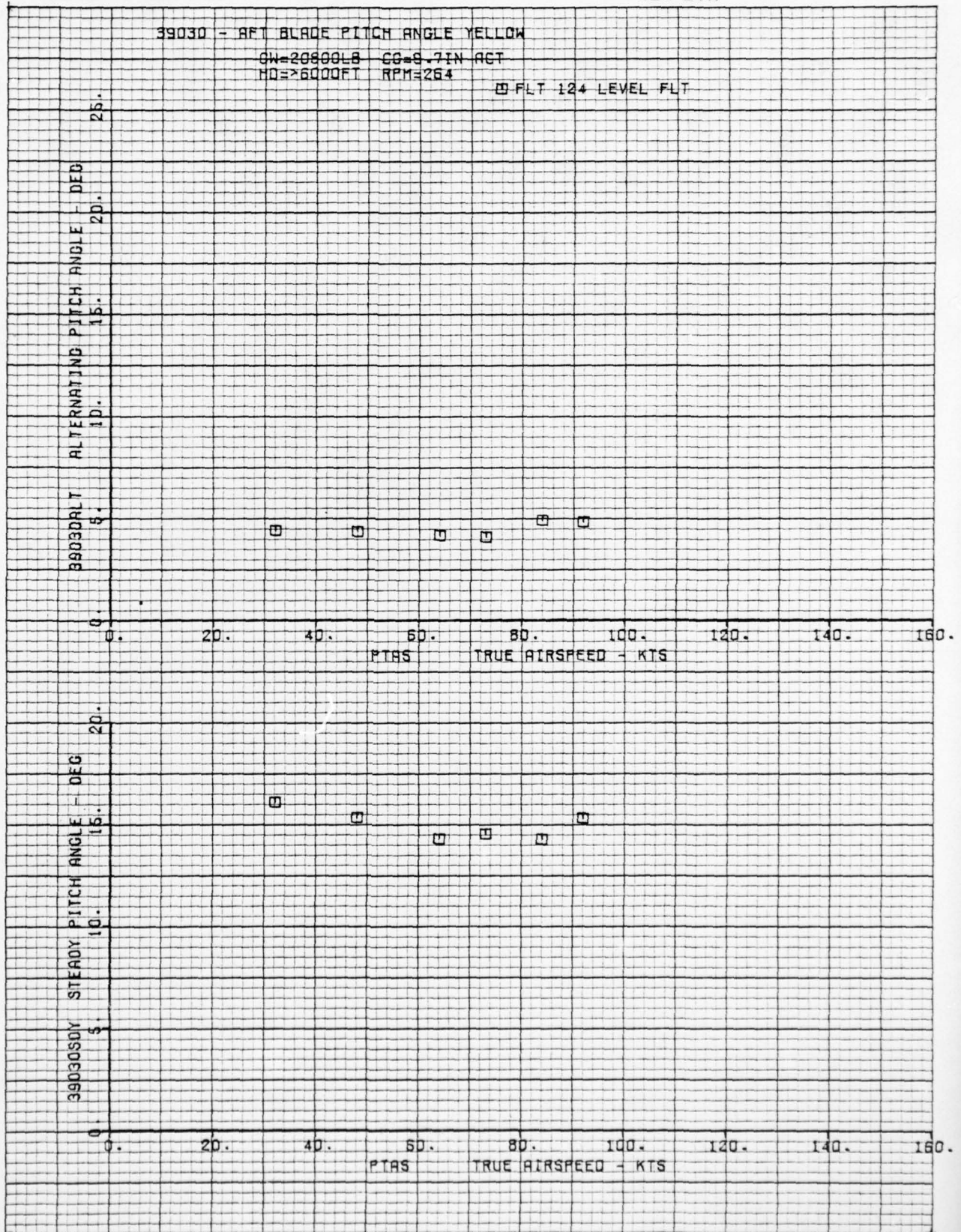
For Plot Numbers -2, -11, -15, -19, -23, and -27.



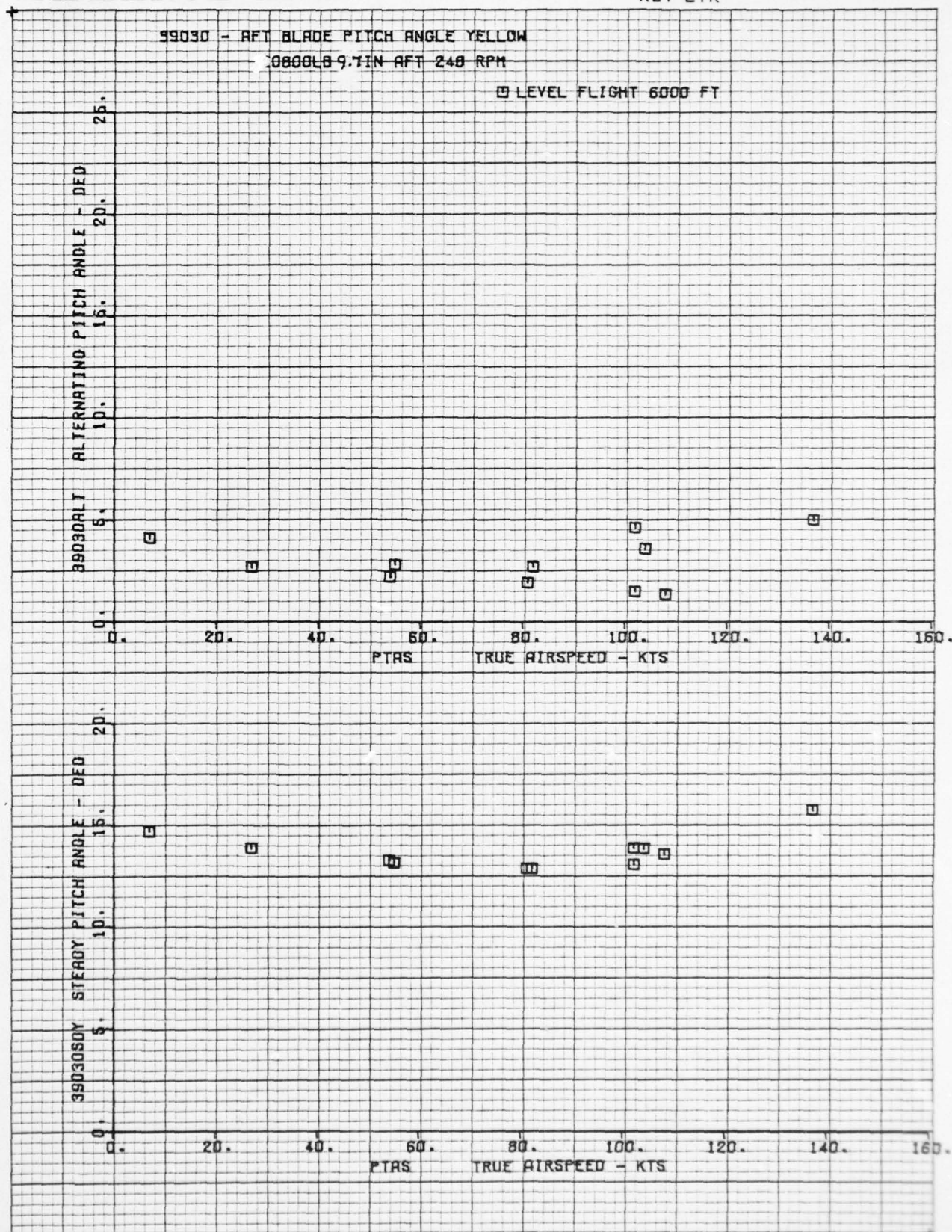
THE **BOEING** COMPANY

D210-11168-3
NUMBER **VOLUME 4**
REV LTR





THE **BOEING** COMPANY



AD-A075 613

BOEING VERTOL CO PHILADELPHIA PA
CH-46 COMPOSITE ROTOR BLADE FLIGHT STRESS SURVEY DATA, VOLUME I--ETC(U)
1978 R AIELLO, J BEND
D210-11168-3-VOL-4

F/6 1/3

N00019-75-C-0396

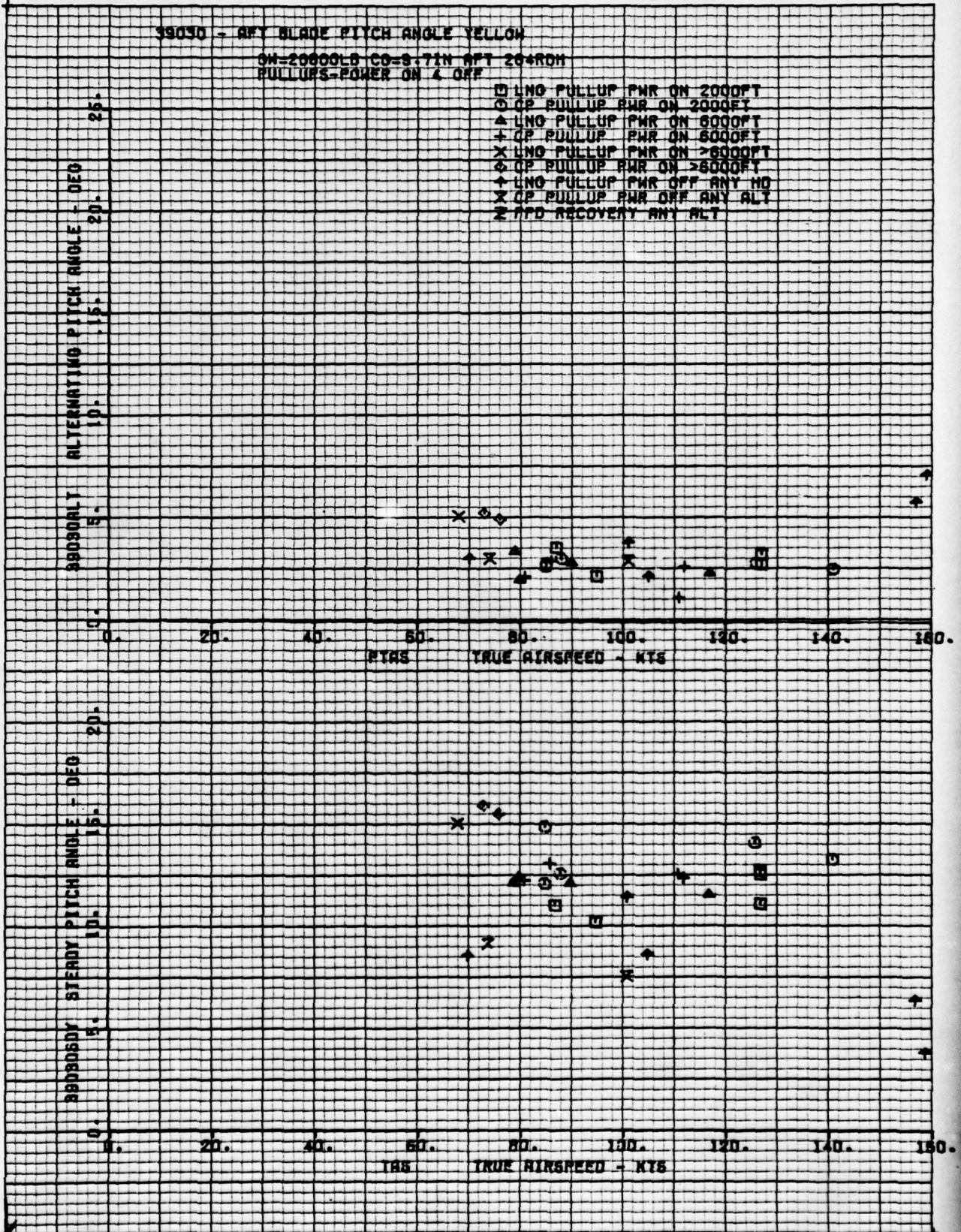
NL

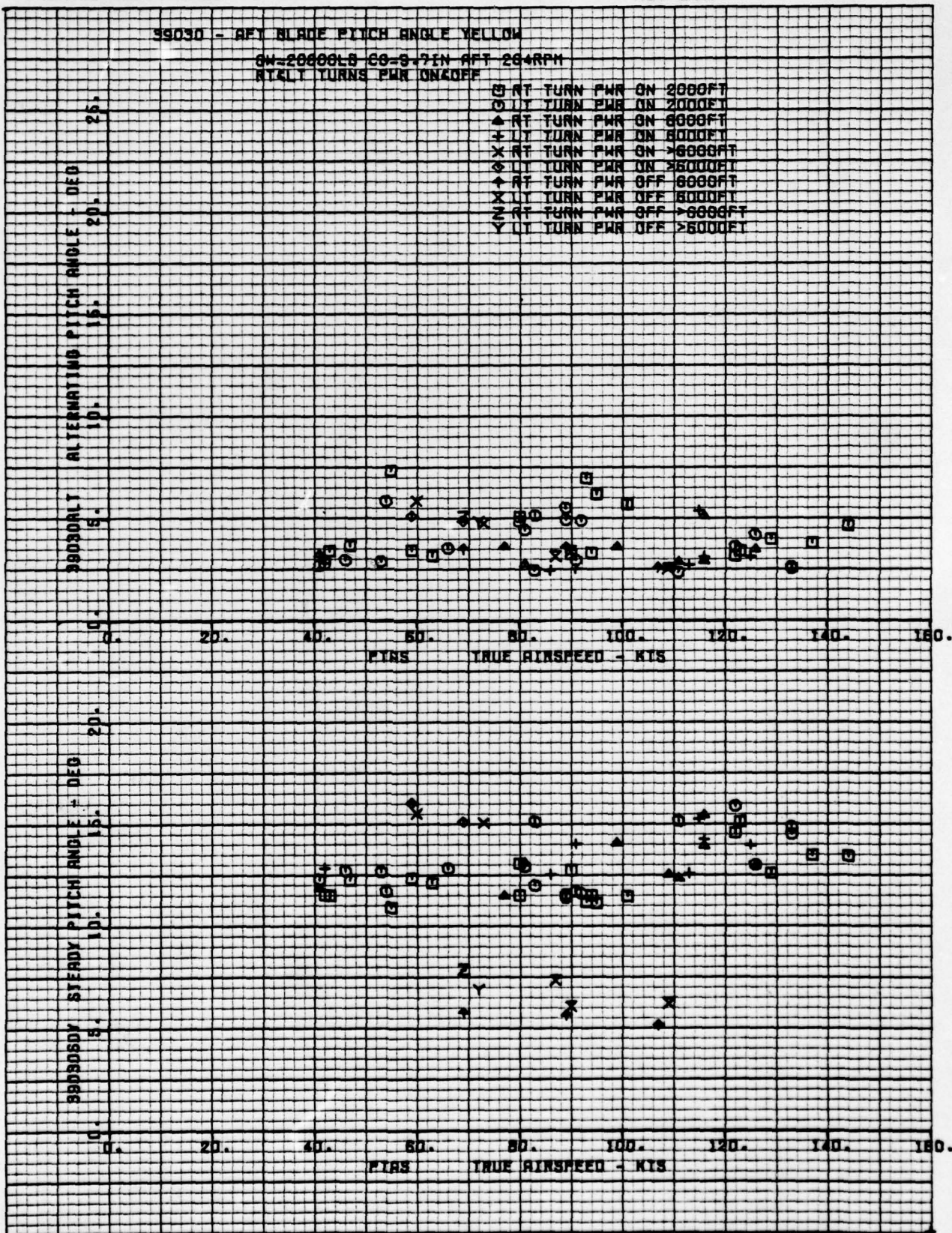
UNCLASSIFIED

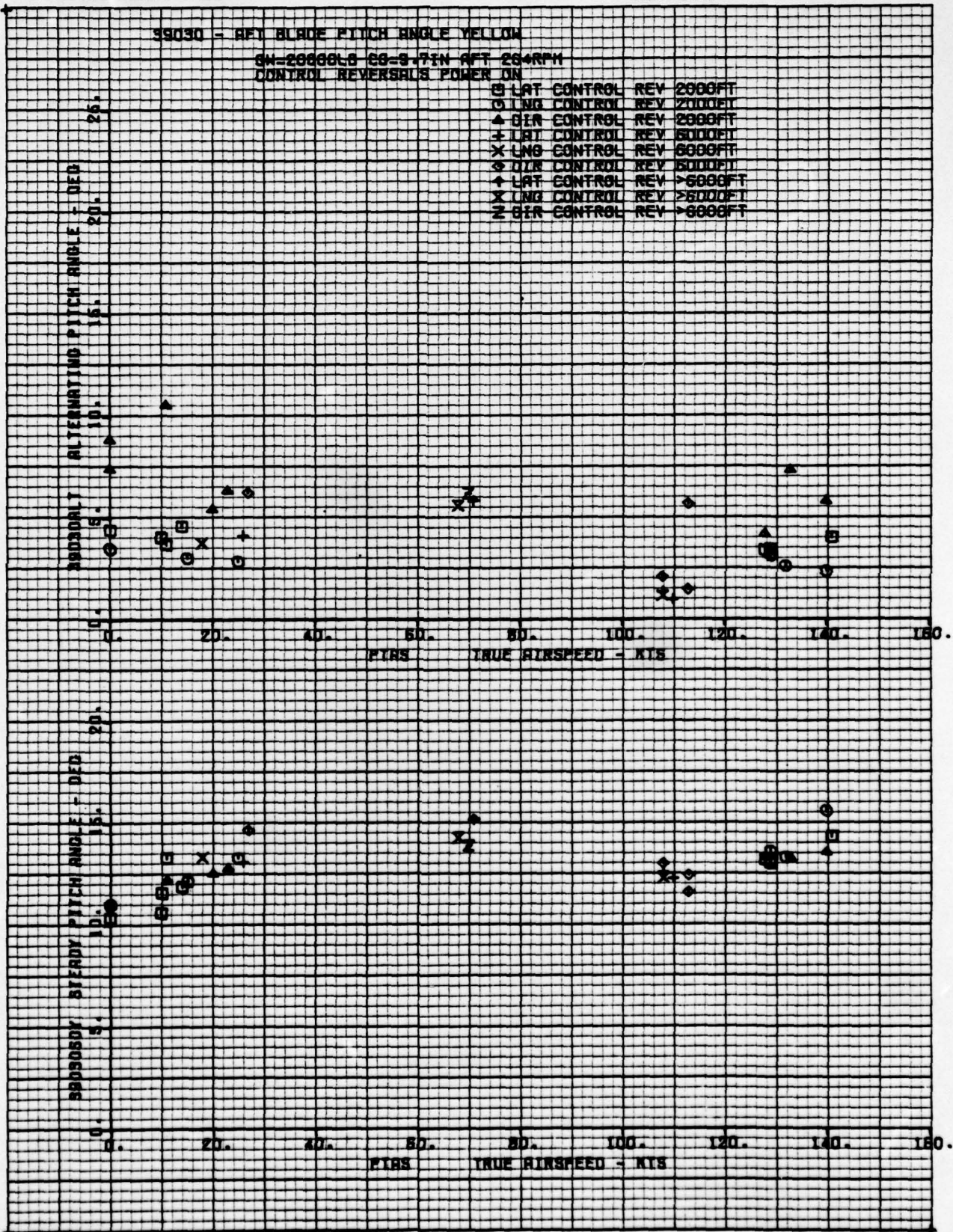
2 OF 4

ADA
075613







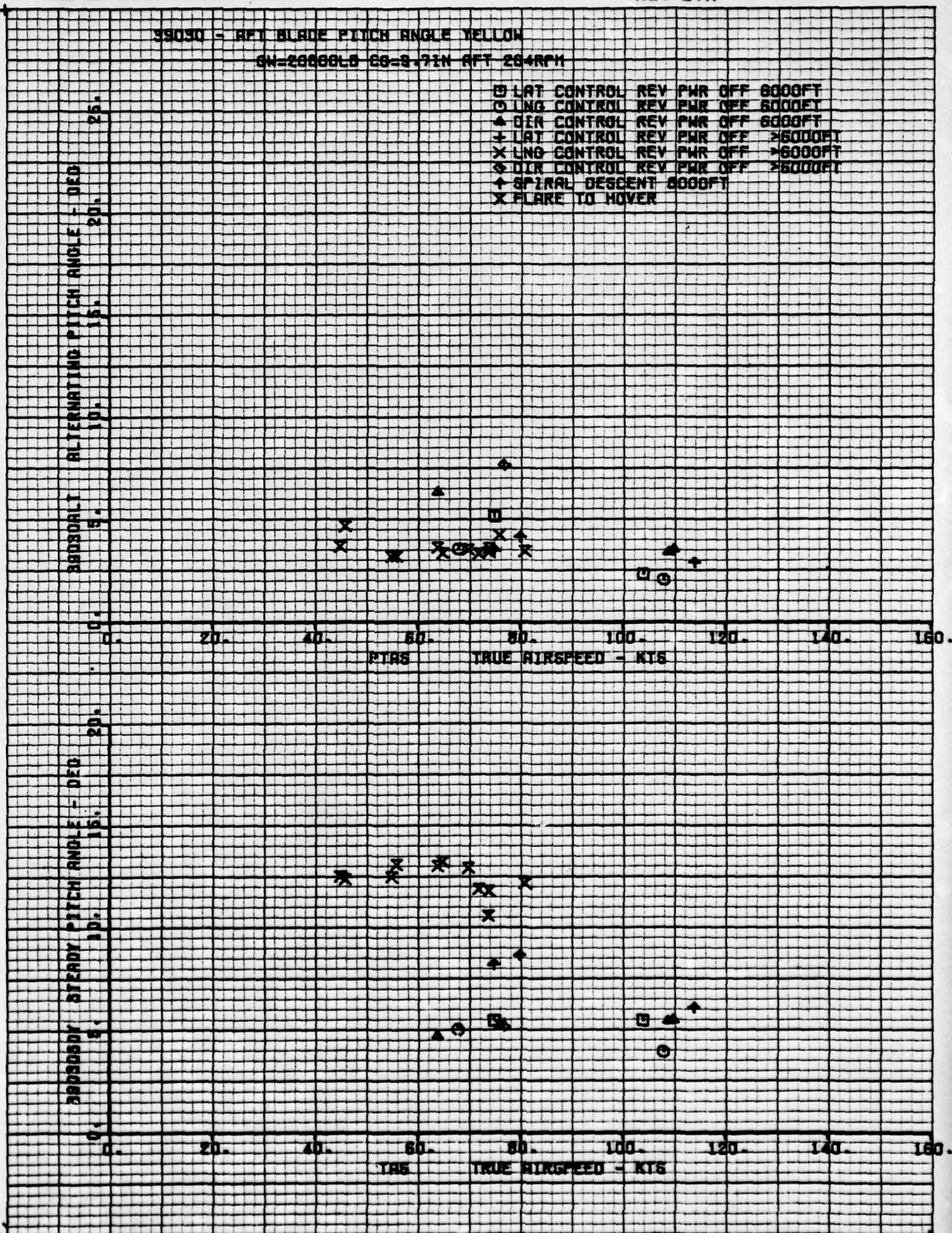


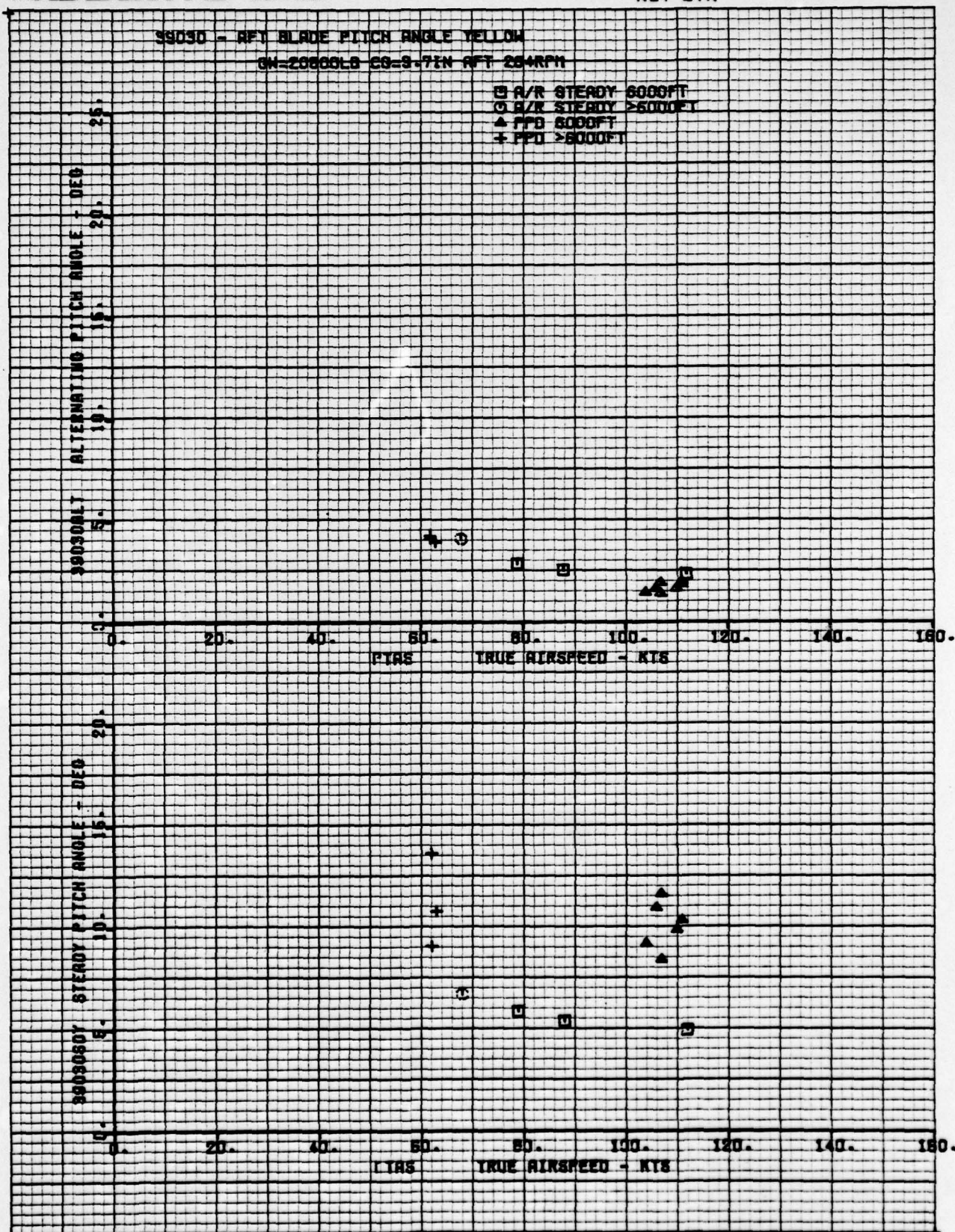
39030 - RPT BLADE PITCH ANGLE YELLOW
GN-20000LS GS-3.7IN RPT 204RPM

□ LAT CONTROL REV PWR OFF 6000FT
○ LING CONTROL REV PWR OFF 6000FT
△ DIR CONTROL REV PWR OFF 6000FT
+ LAT CONTROL REV PWR OFF >6000FT
× LING CONTROL REV PWR OFF >6000FT
◇ DIR CONTROL REV PWR OFF >6000FT
↑ SPIRAL DESCENT 6000FT
X FLARE TO HOVER

39030ALT ALTERNATING PITCH ANGLE - DEG

39030SDY STEADY PITCH ANGLE - DEG





THE **BOEING** COMPANY

D210-11168-3

NUMBER **VOLUME 4**
REV LTR

39030 - HPT BLADE PITCH ANGLE YELLOW

GM=24500LB CG=13.2IN FMS
HD=2000FT RPM=264

□ FLT 117 LEVEL FLT
○ FLT 119 LEVEL FLT
▲ FLT 121 LEVEL FLT

39030ALY ALTERNATING PITCH ANGLE - DEG

39030SOY STEADY PITCH ANGLE - DEG

25.

20.

15.

10.

5.

0.

20.

15.

10.

5.

0.

20.

40.

60.

80.

100.

120.

140.

160.

PTAS

TRUE AIRSPEED - KTS

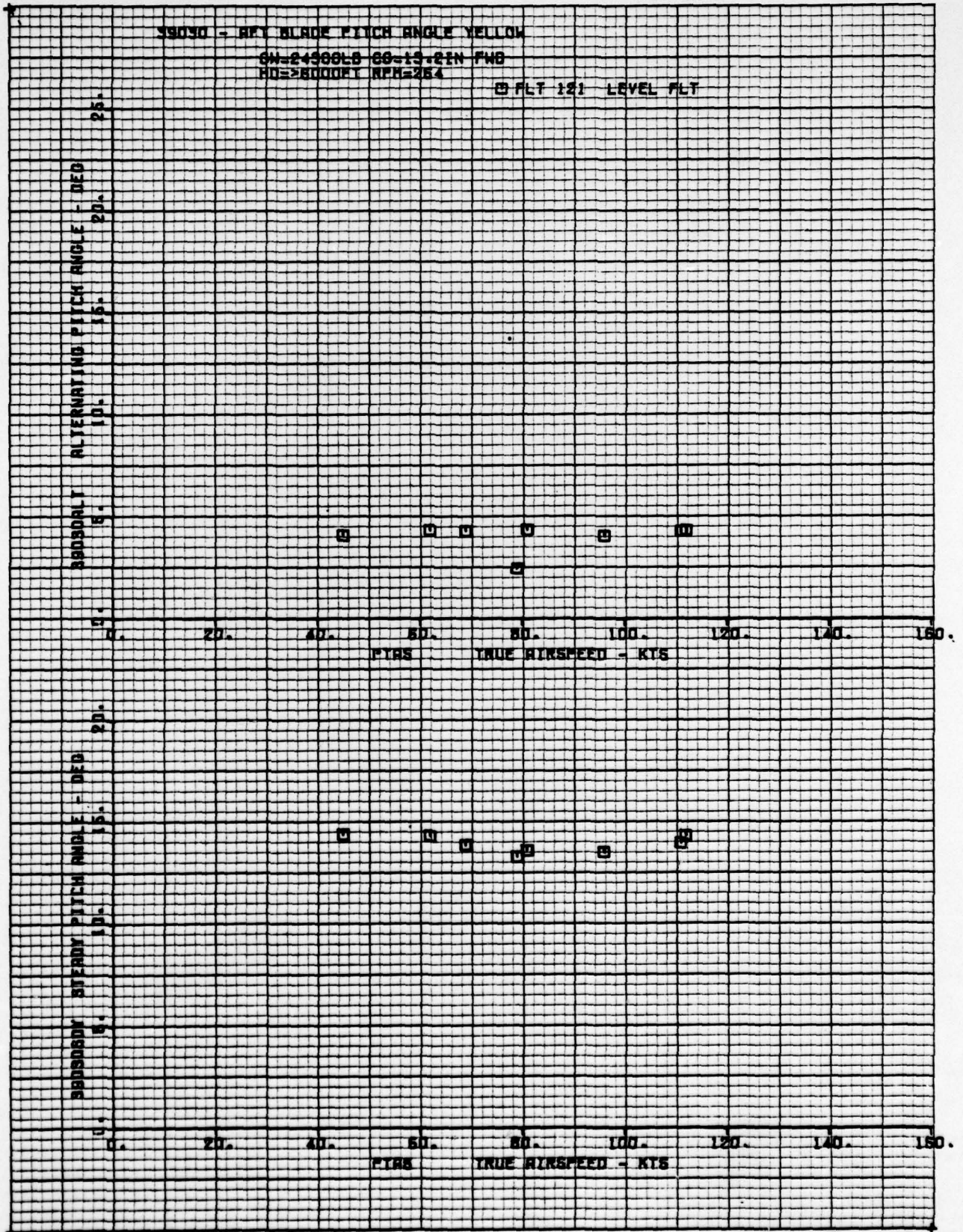
PTAS

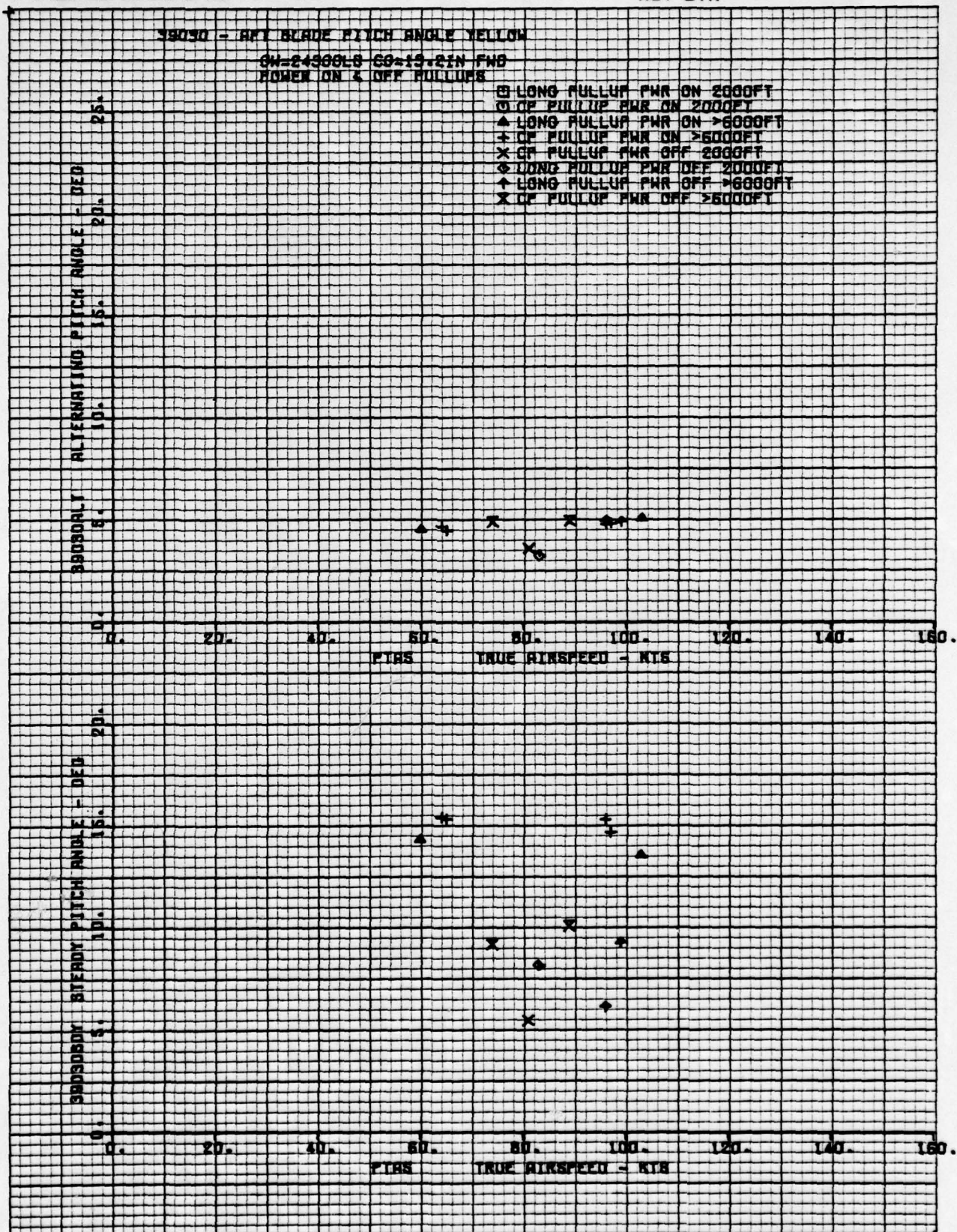
TRUE AIRSPEED - KTS

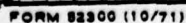
THE **BOEING** COMPANY

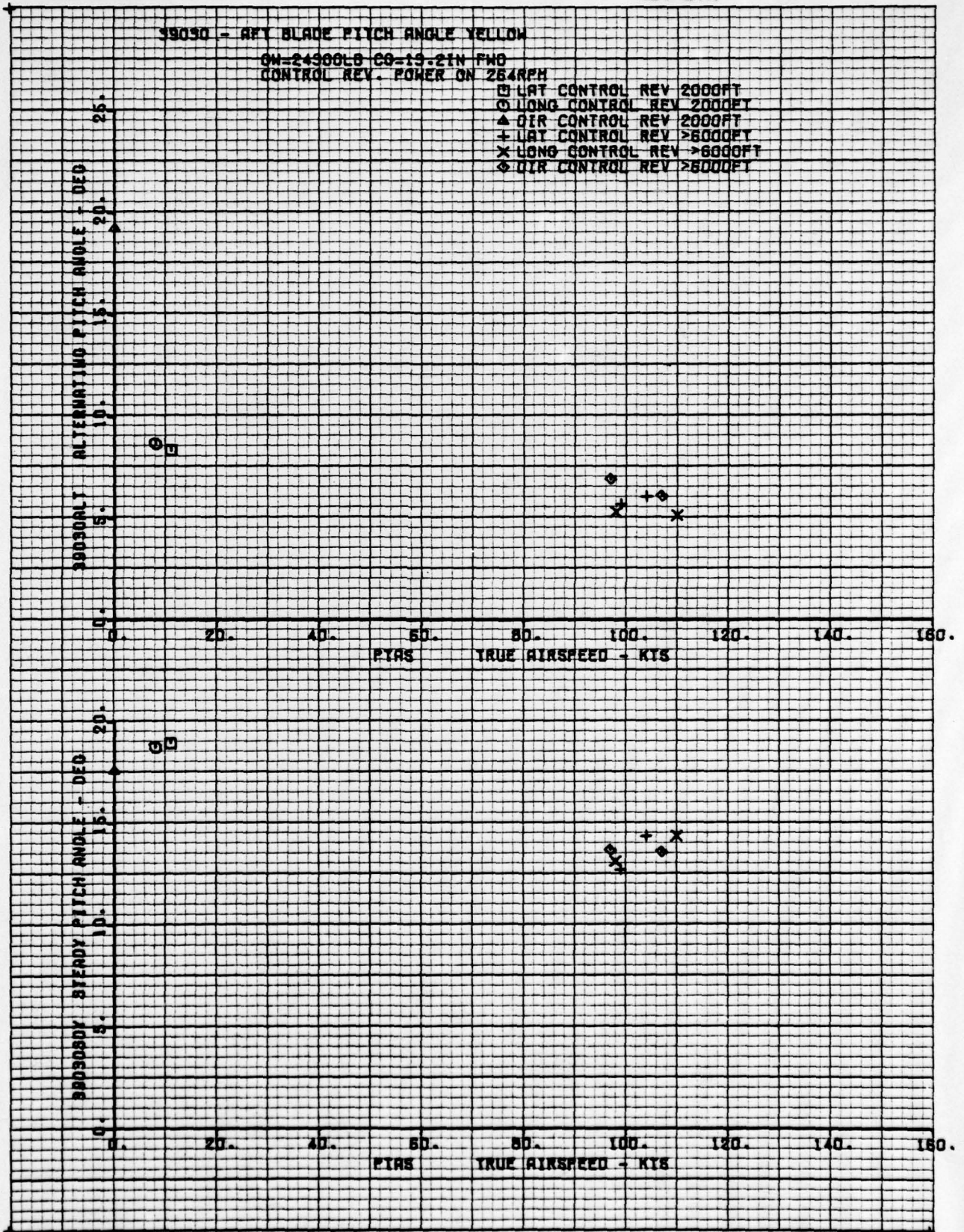
D210-11168-3

NUMBER **VOLUME 4**
REV LTR





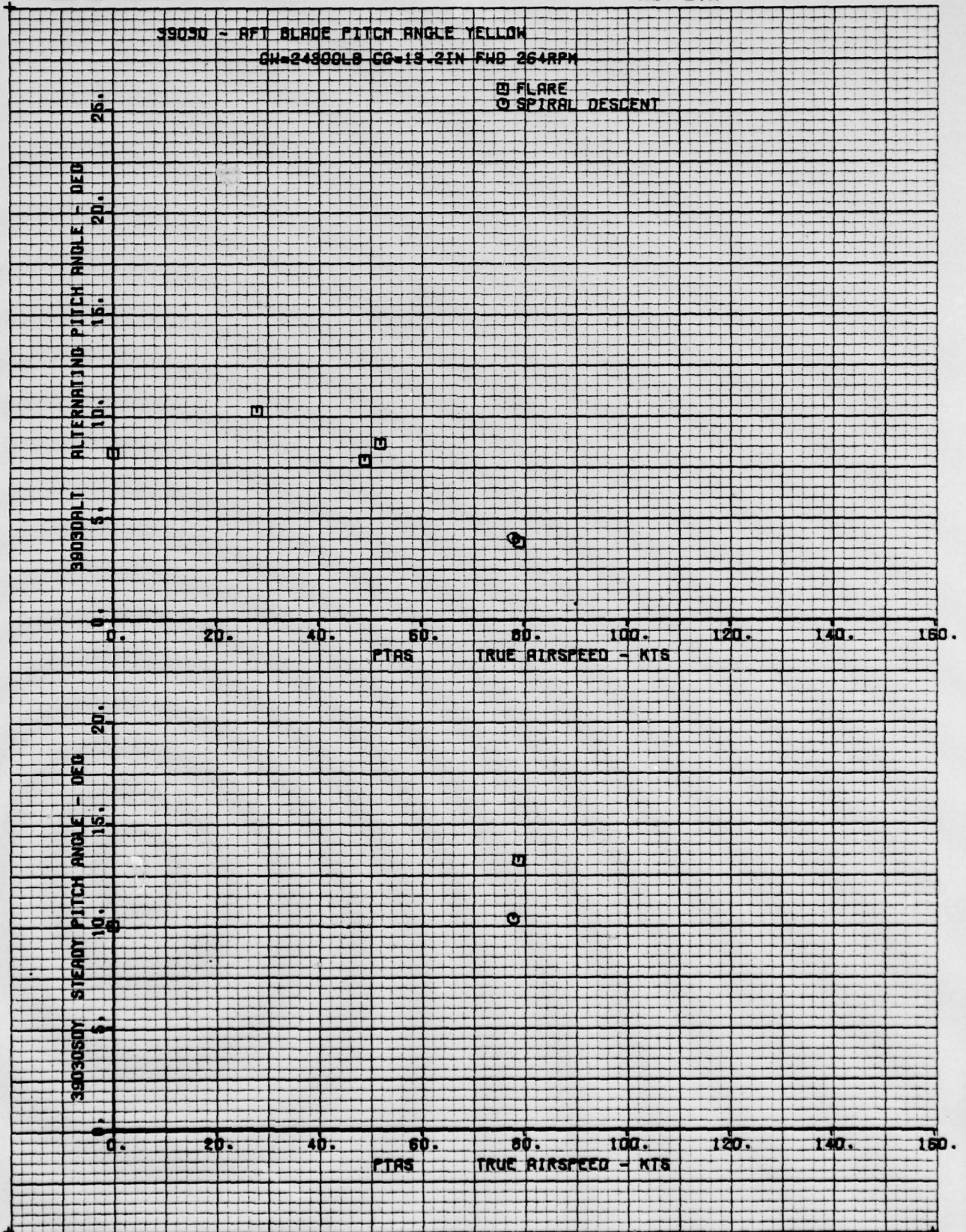




D210-11168-3

NUMBER **VOLUME 4**
REV LTR

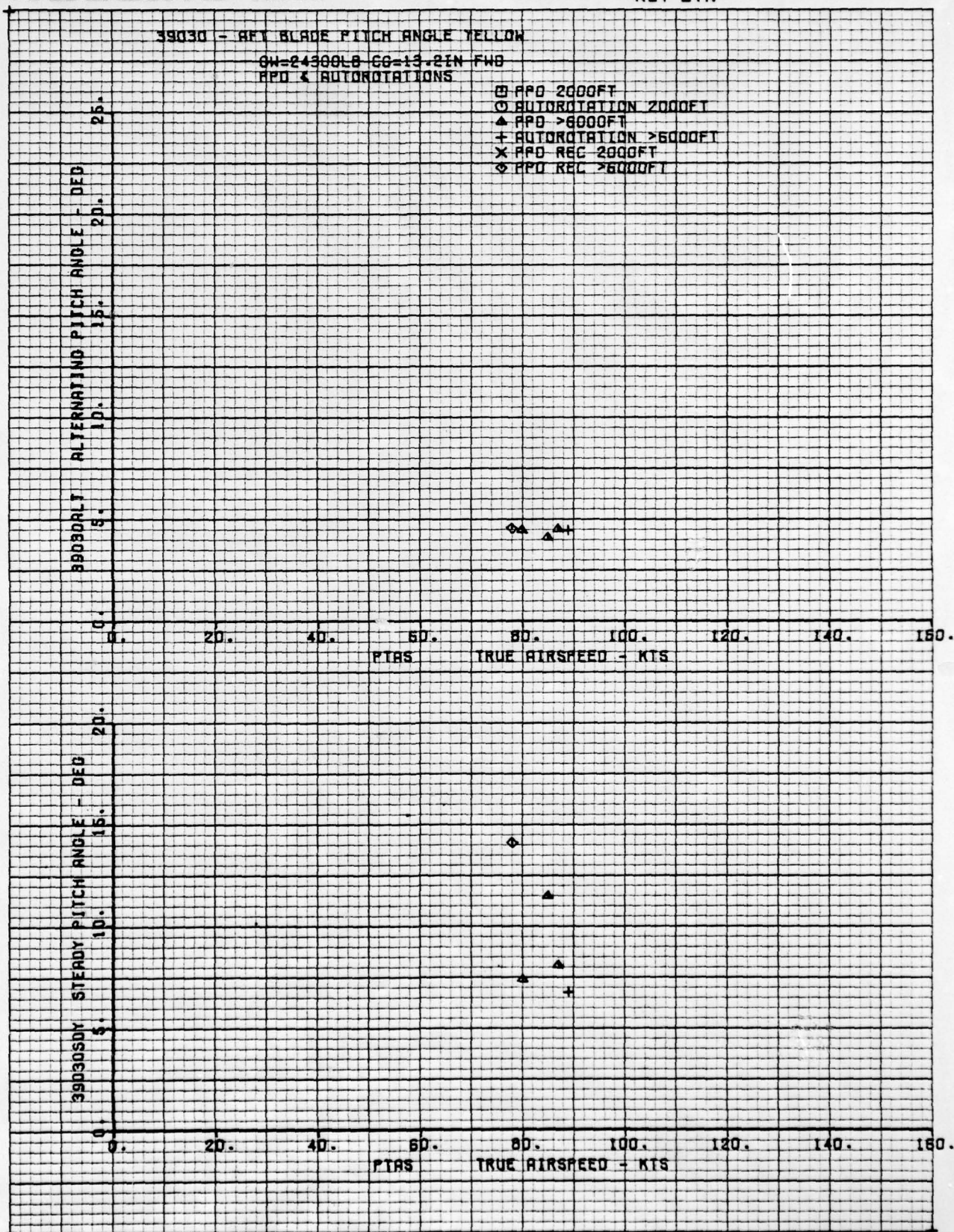
THE **BOEING** COMPANY

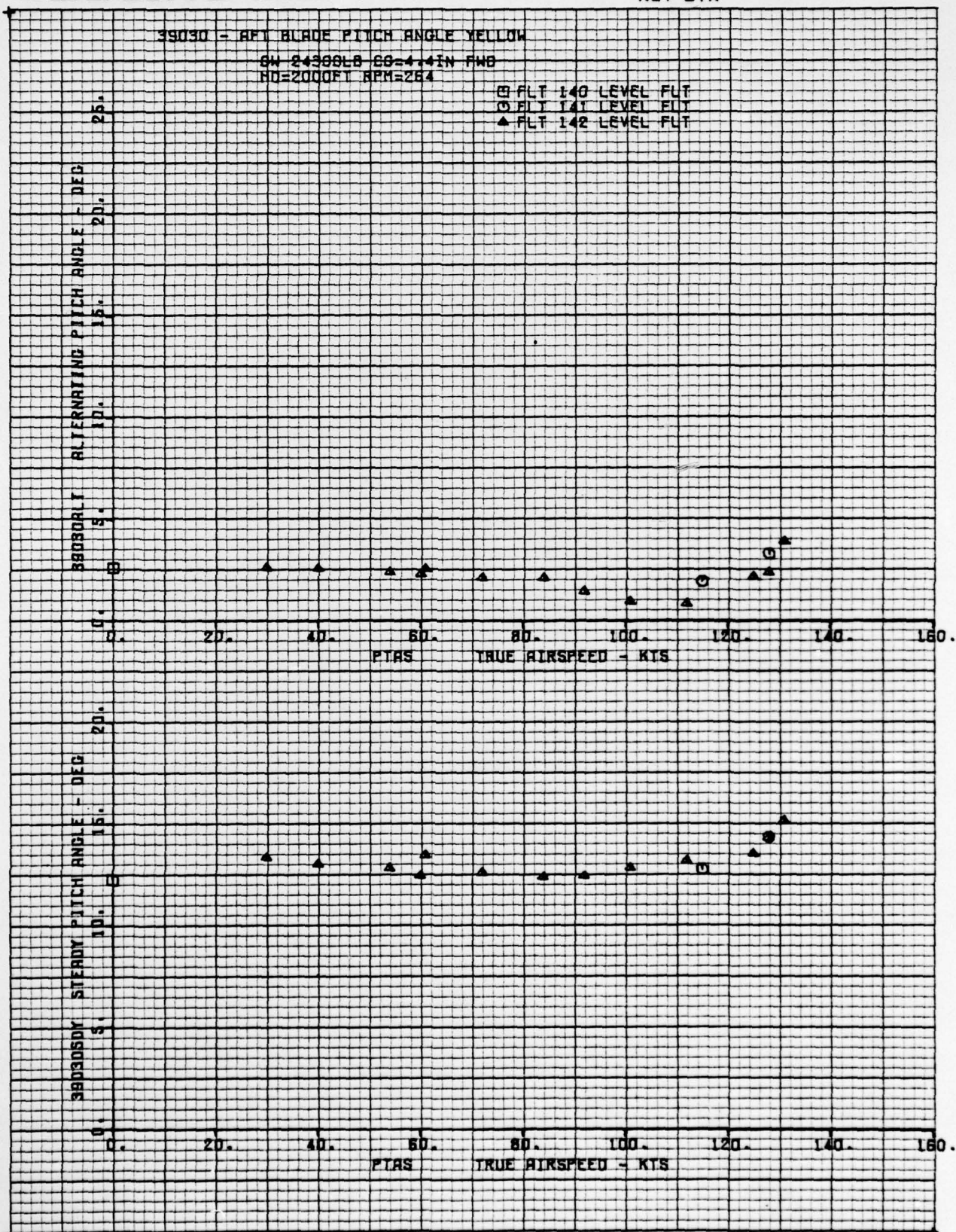


THE **BOEING** COMPANY

D210-11168-3

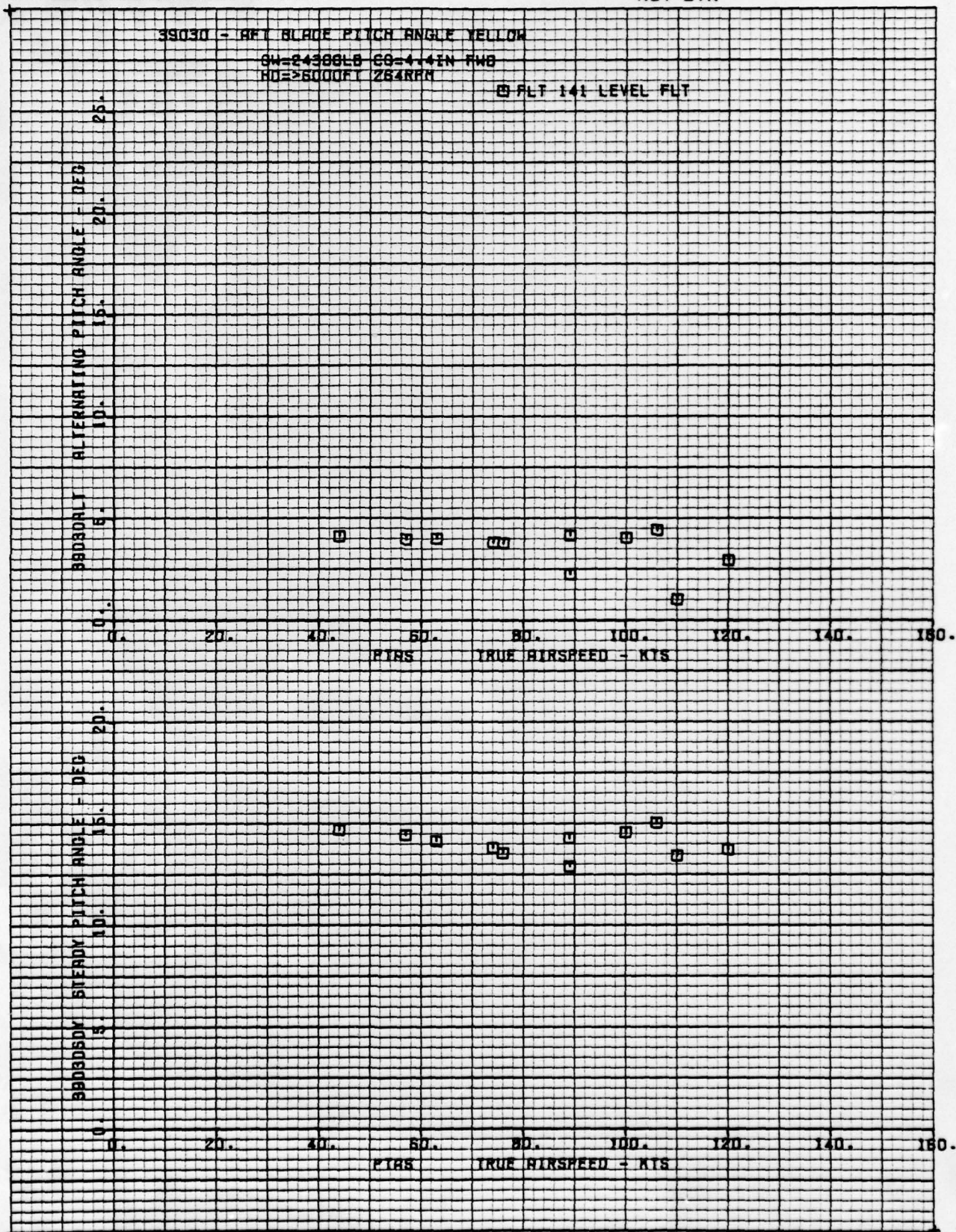
NUMBER **VOLUME 4**
REV LTR



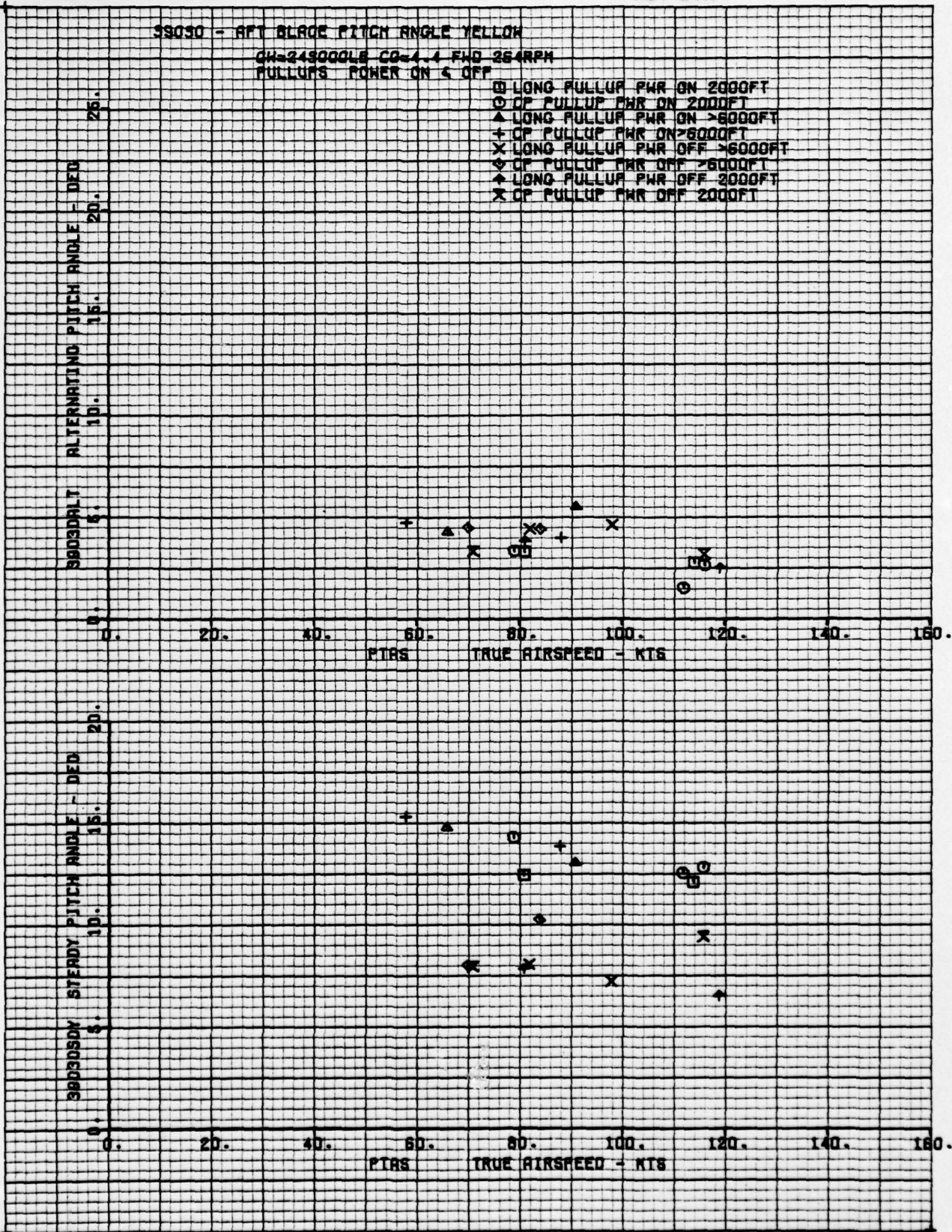


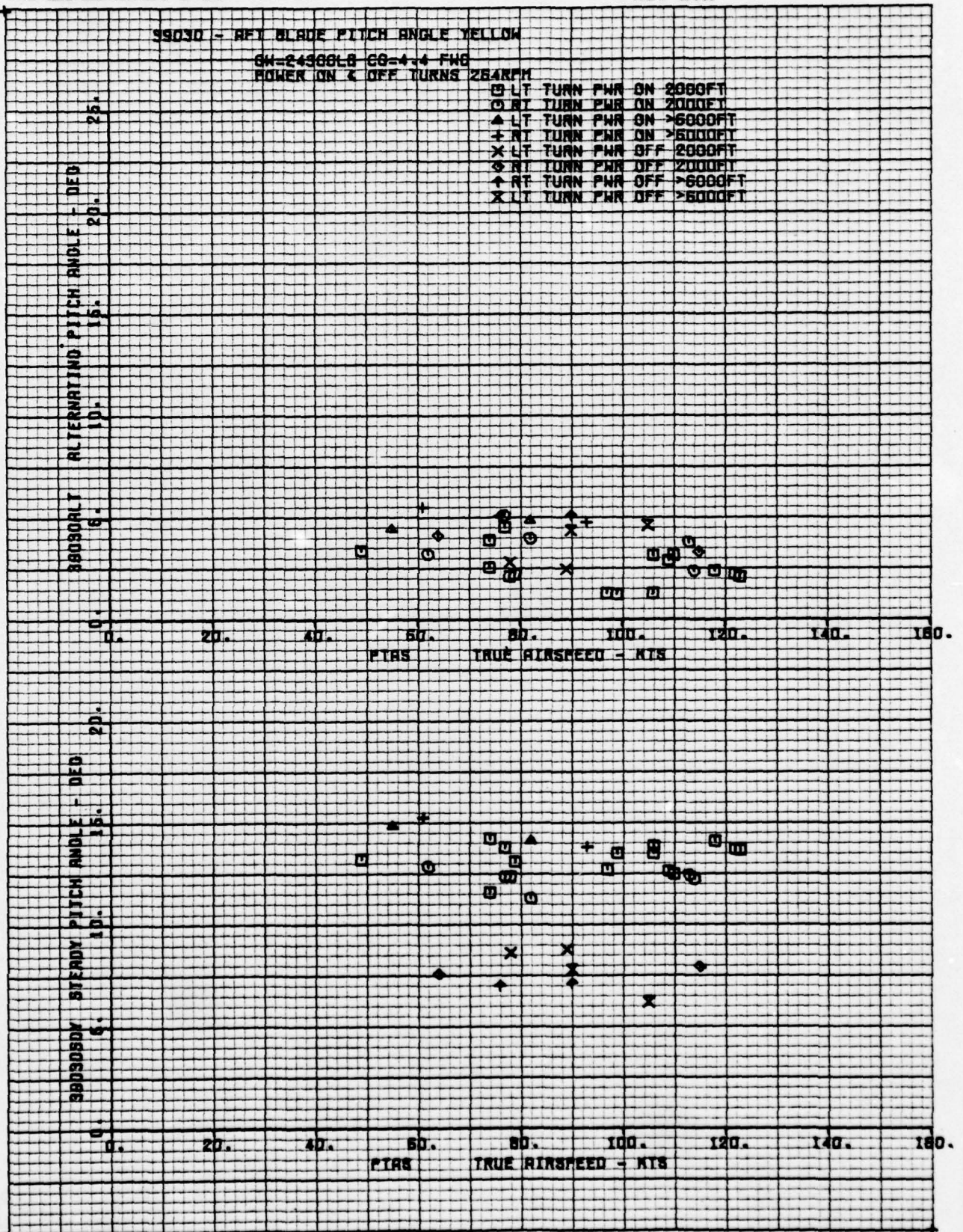
THE **BOEING** COMPANY

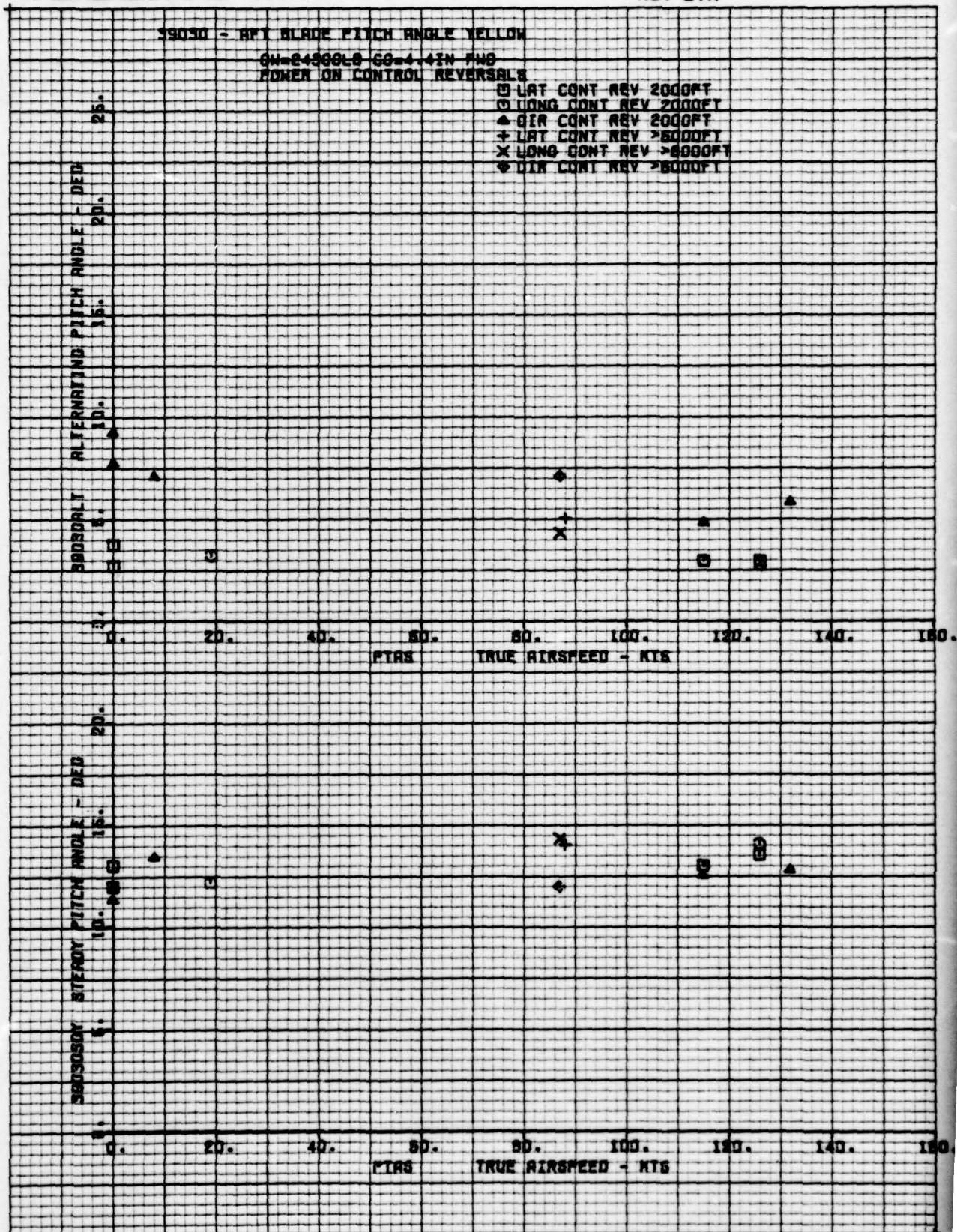
D210-11168-3
NUMBER : VOLUME 4
REV LTR



FORM 52300 (10/71)



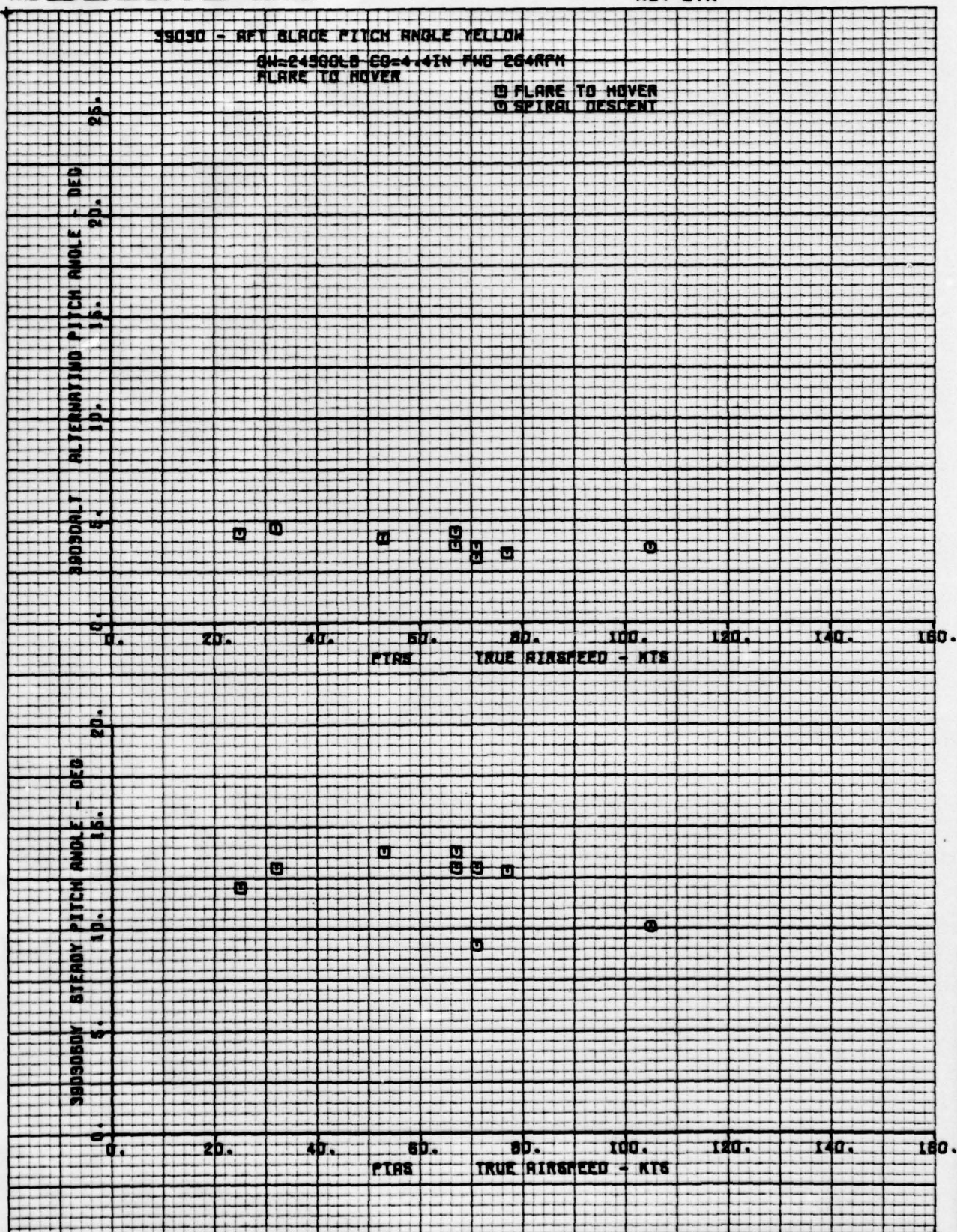


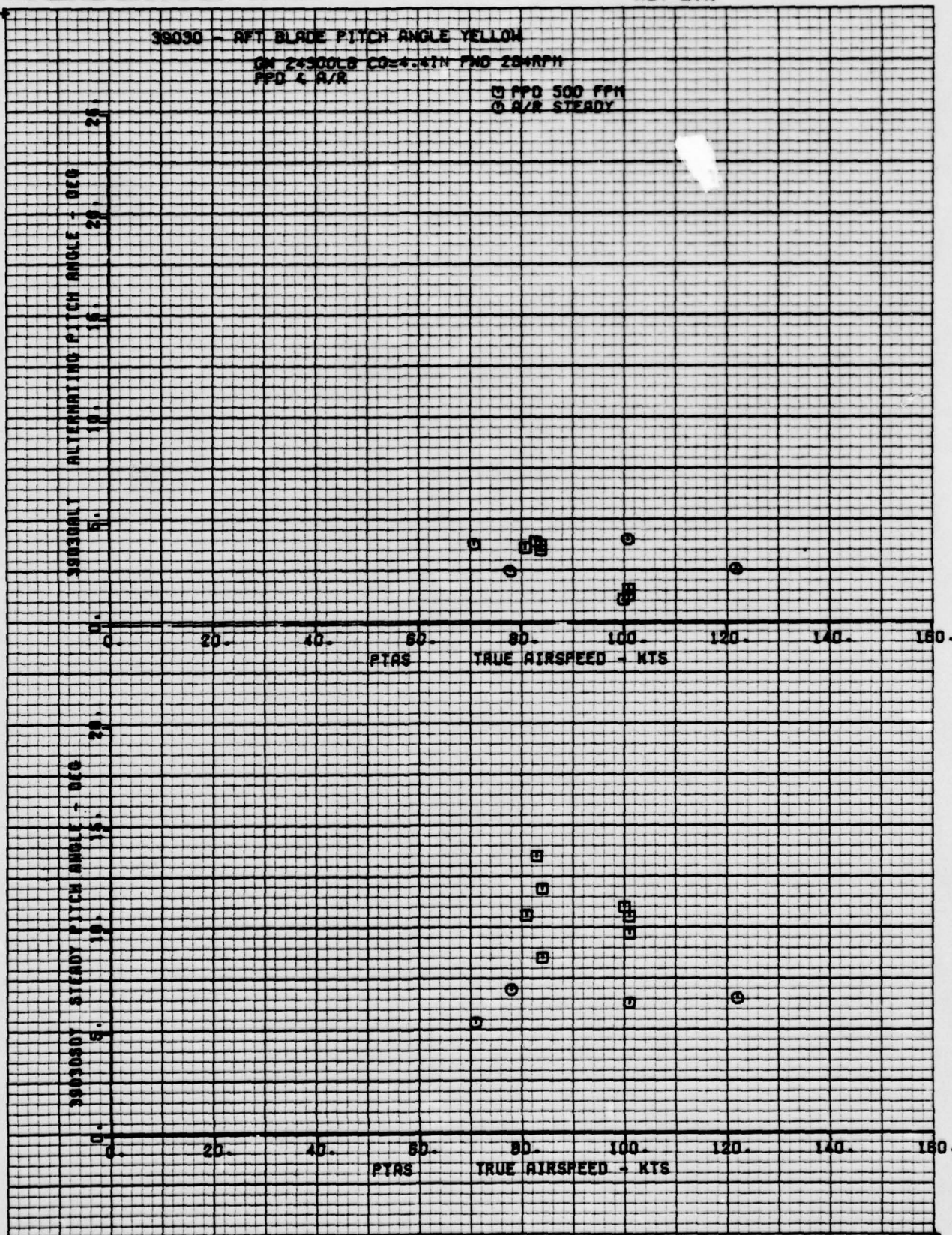


D210-11168-3

NUMBER 1 VOLUME 4
REV LTR

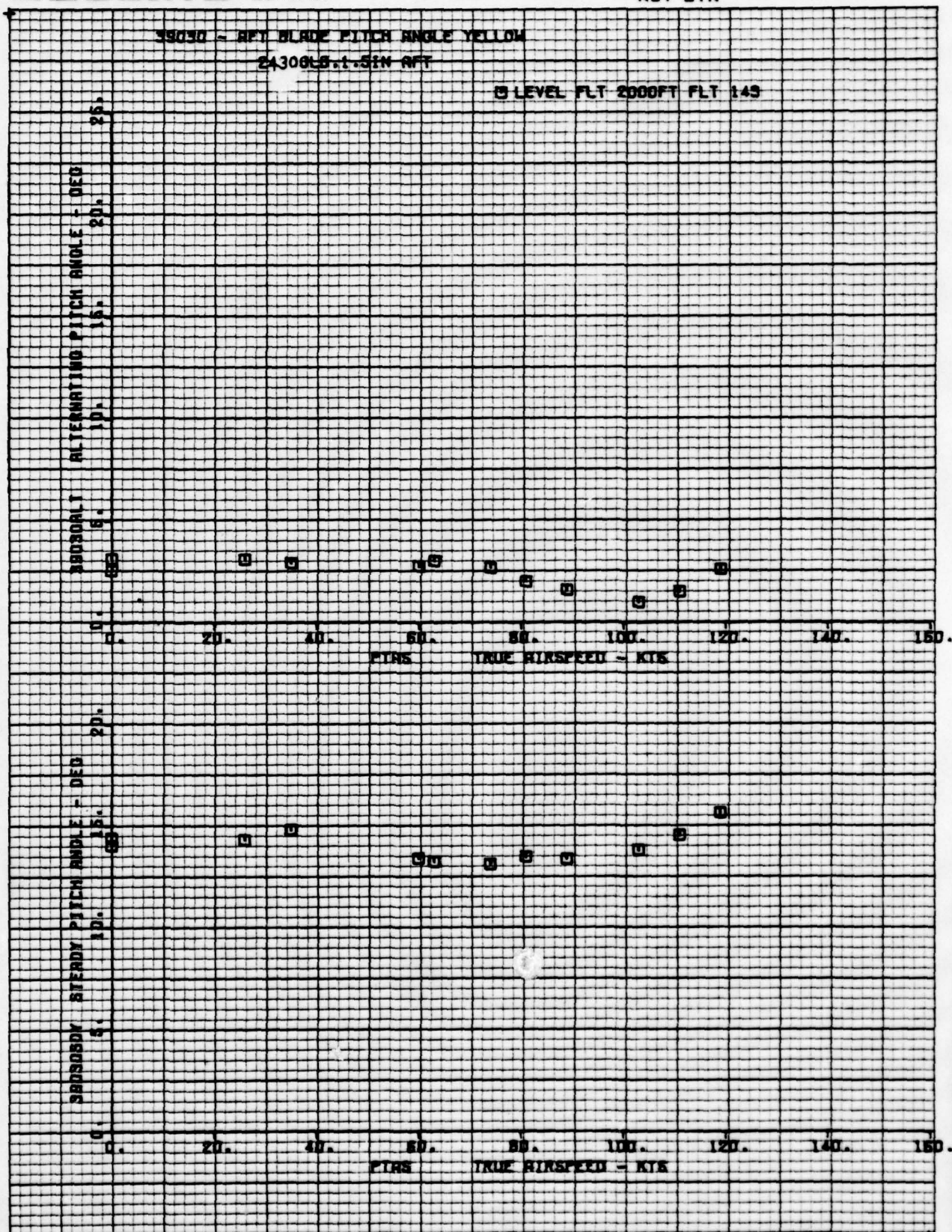
THE **BOEING** COMPANY





THE **BOEING** COMPANY

D210-11168-3
NUMBER 55 VOLUME 4
REV LTR



THE **BOEING** COMPANY

PREPARED BY: J. Bendo

CHECKED BY:

DATE: 8/28/78

NUMBER D210-11168-3

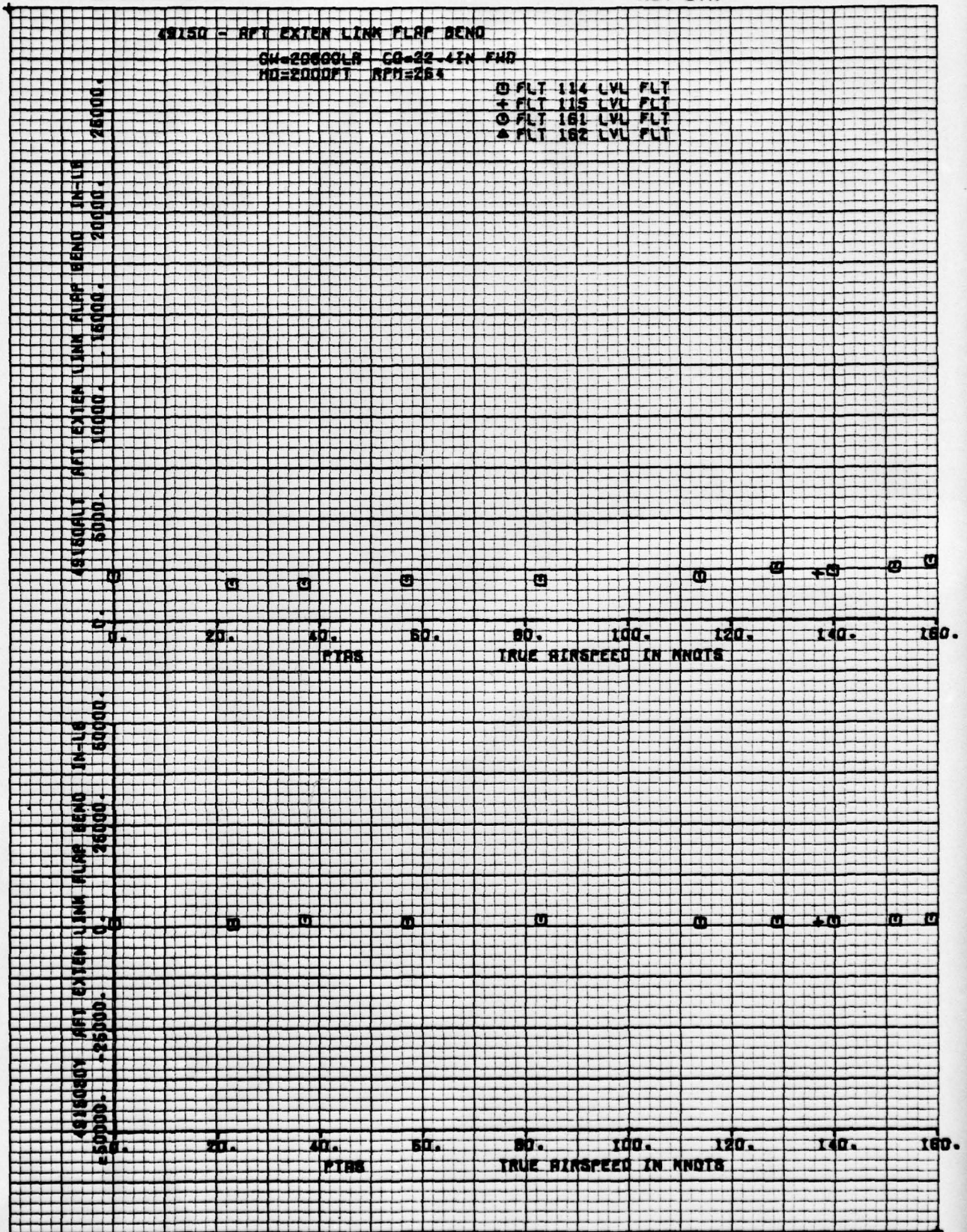
REV LTR Volume 4

MODEL NO.

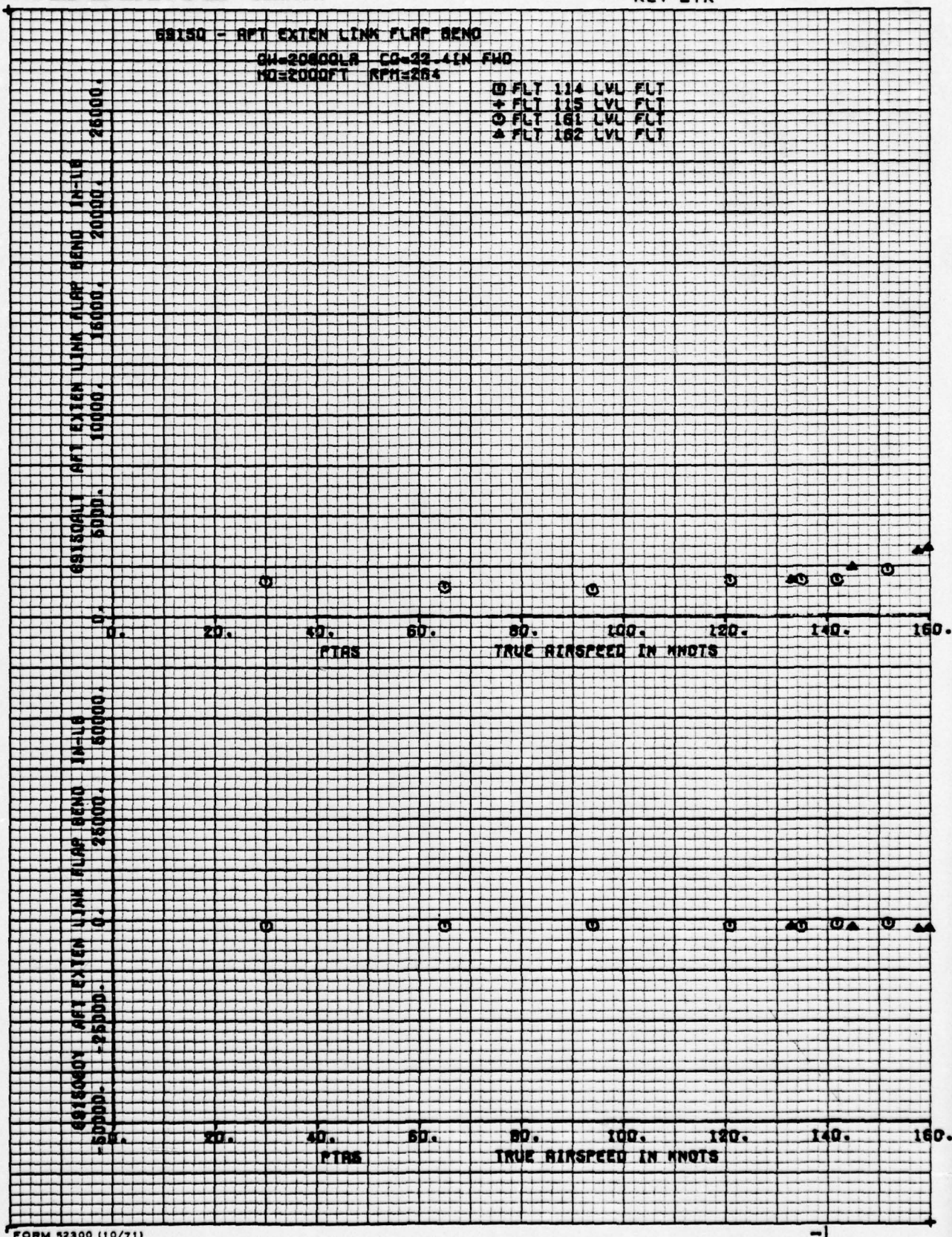
4.4 Aft Blade Extension Link Flap Bending

THE **BOEING** COMPANY

D210-11168-3
NUMBER
REV LTR
VOLUME 4

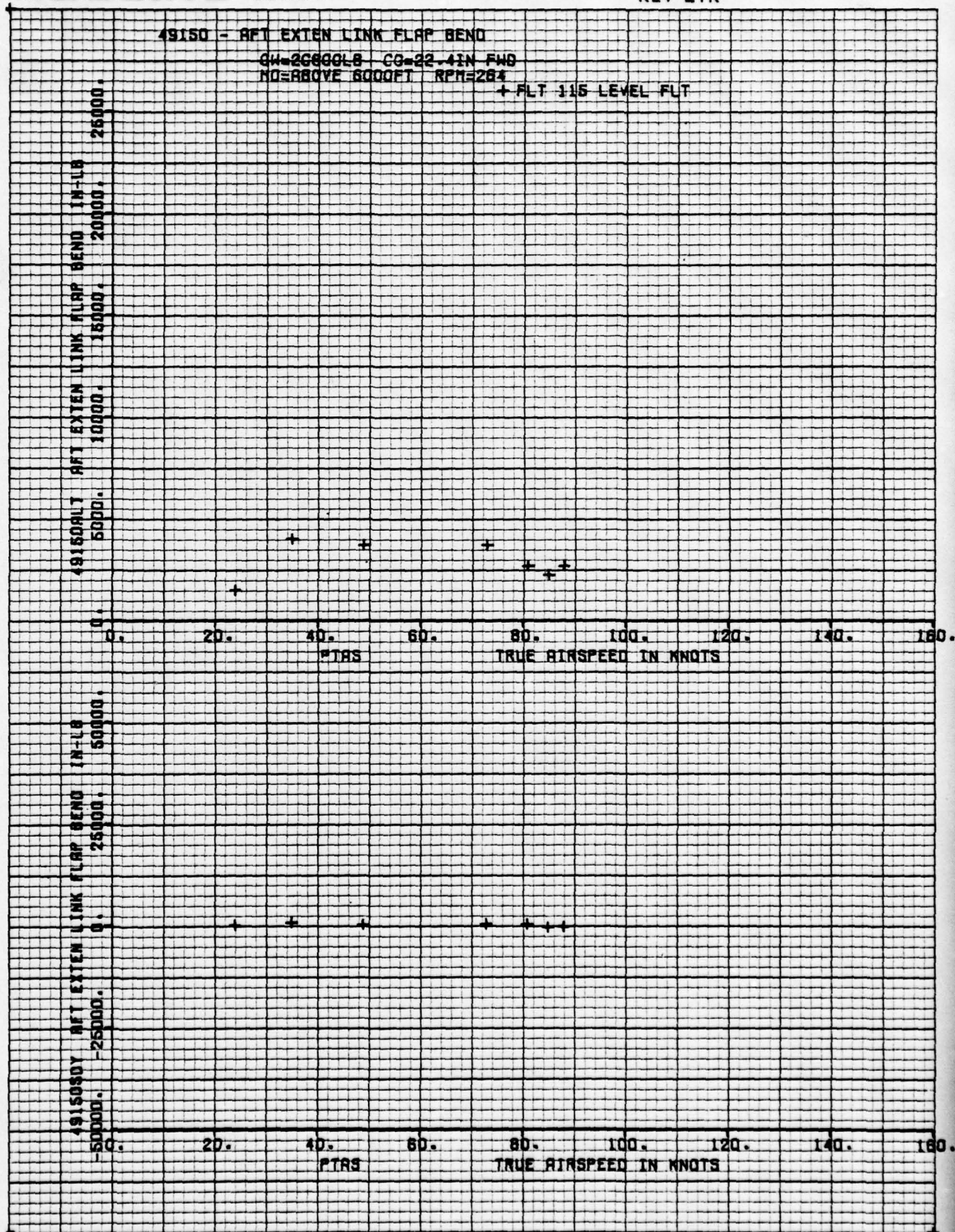


FORM 52300 (10/71)

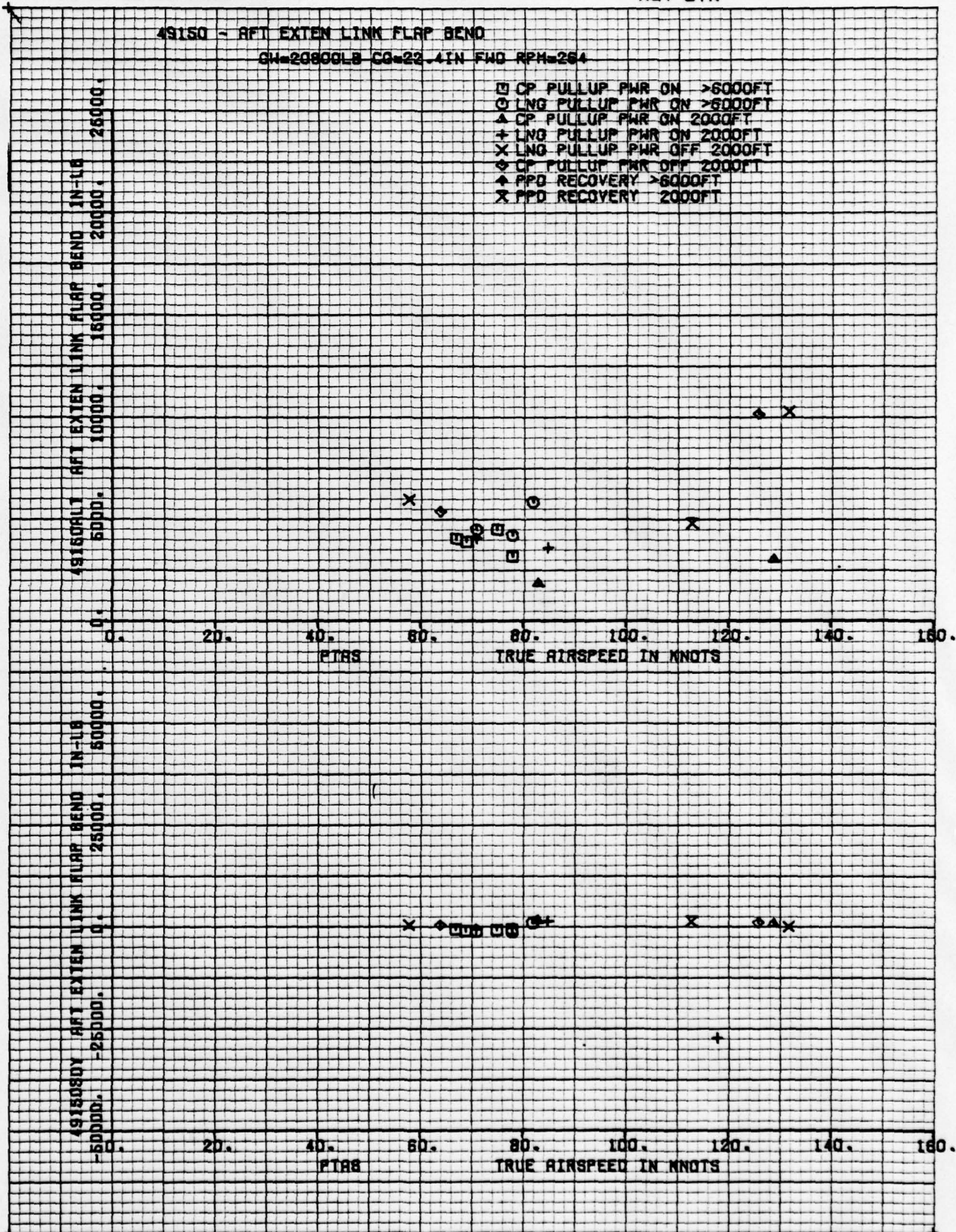


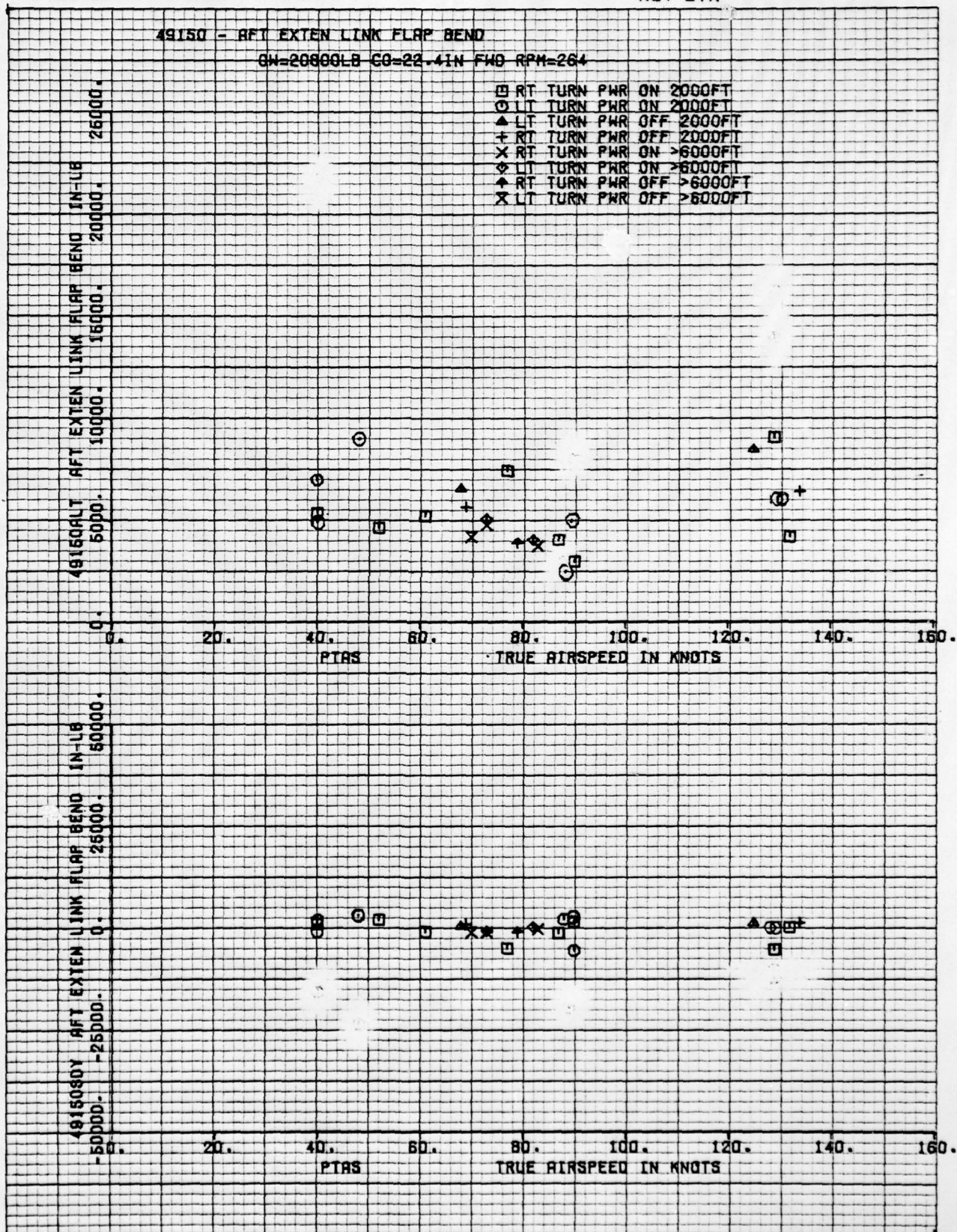
THE **BOEING** COMPANY

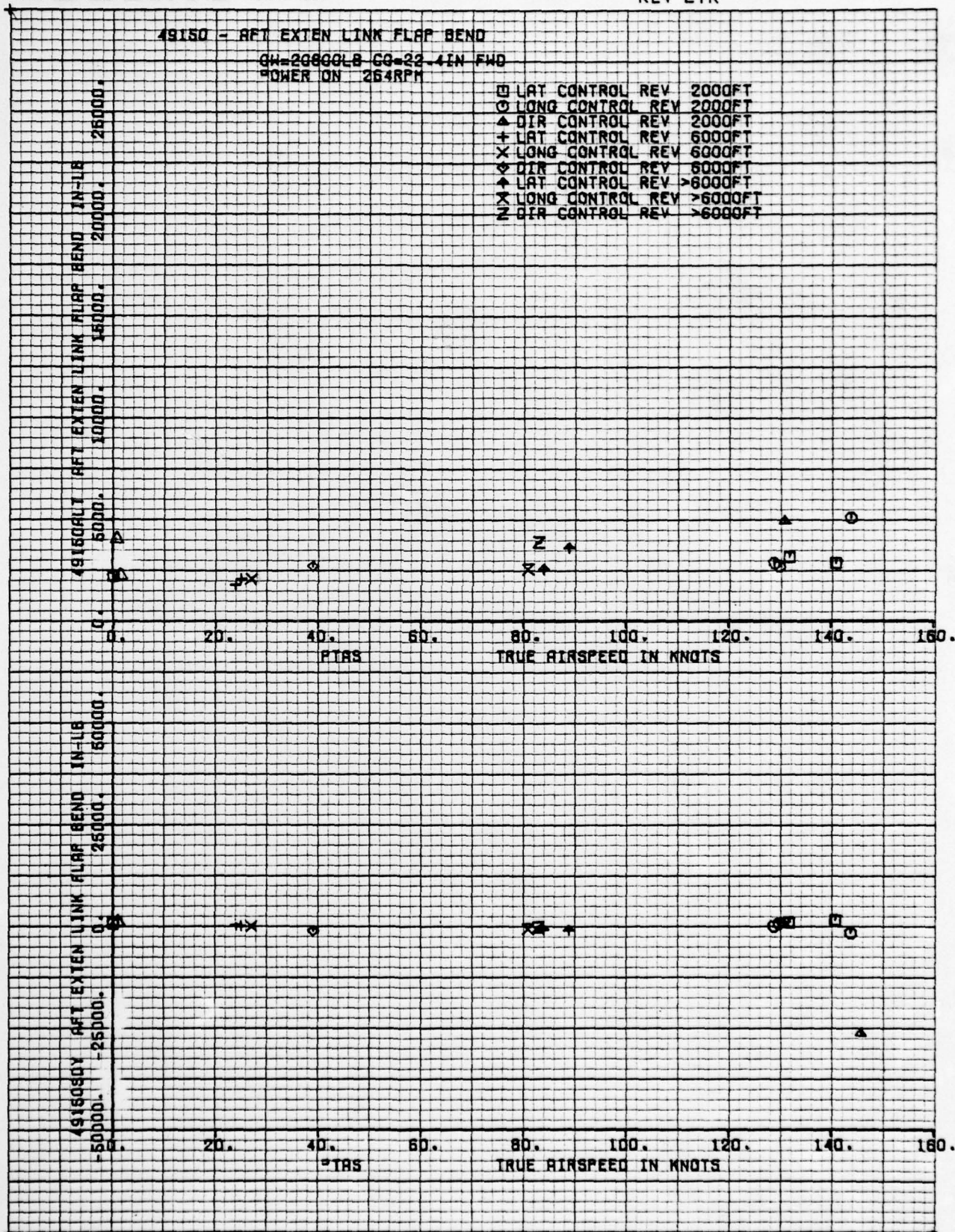
D210-11168-3
NUMBER 1 VOLUME 4
REV LTR



FORM 52300 (10/71)

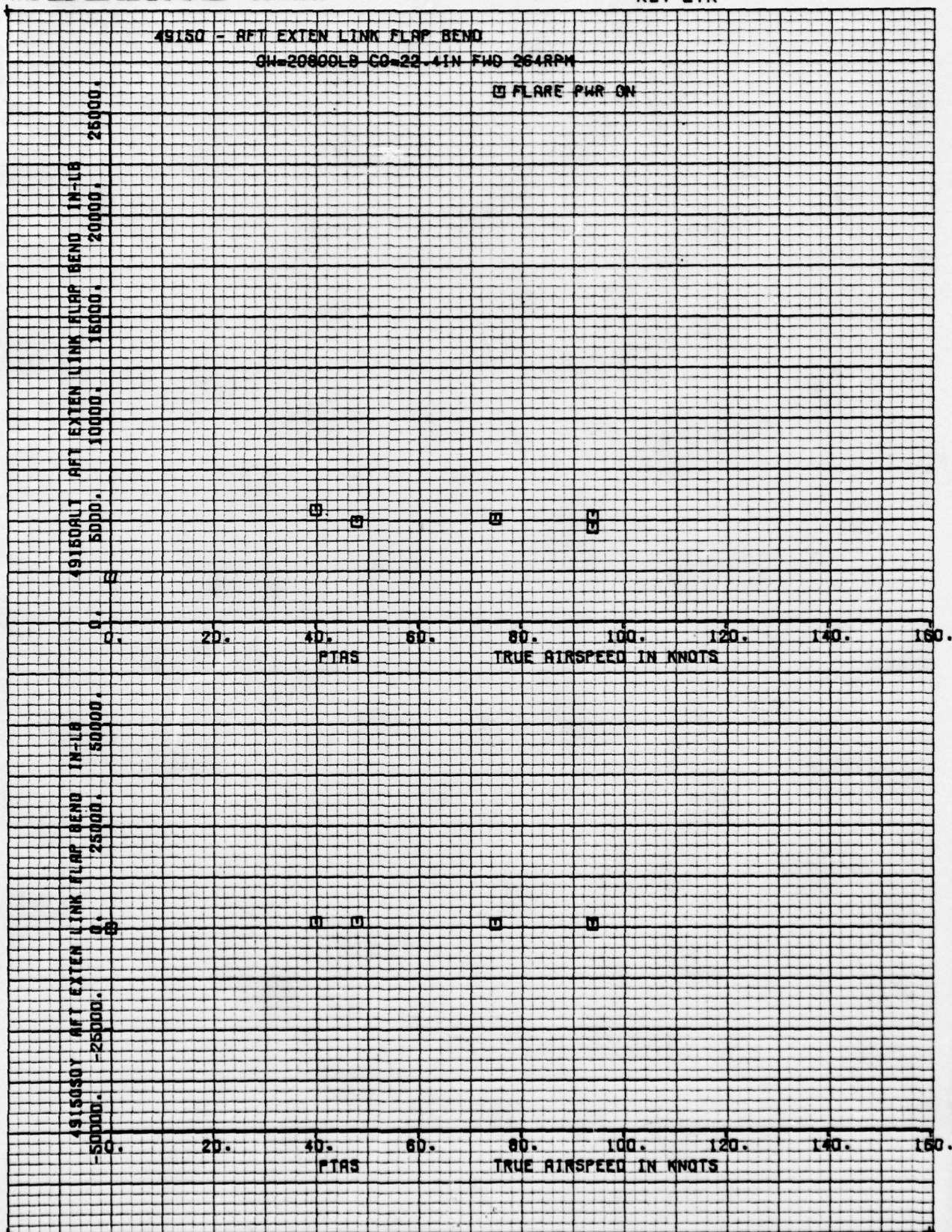


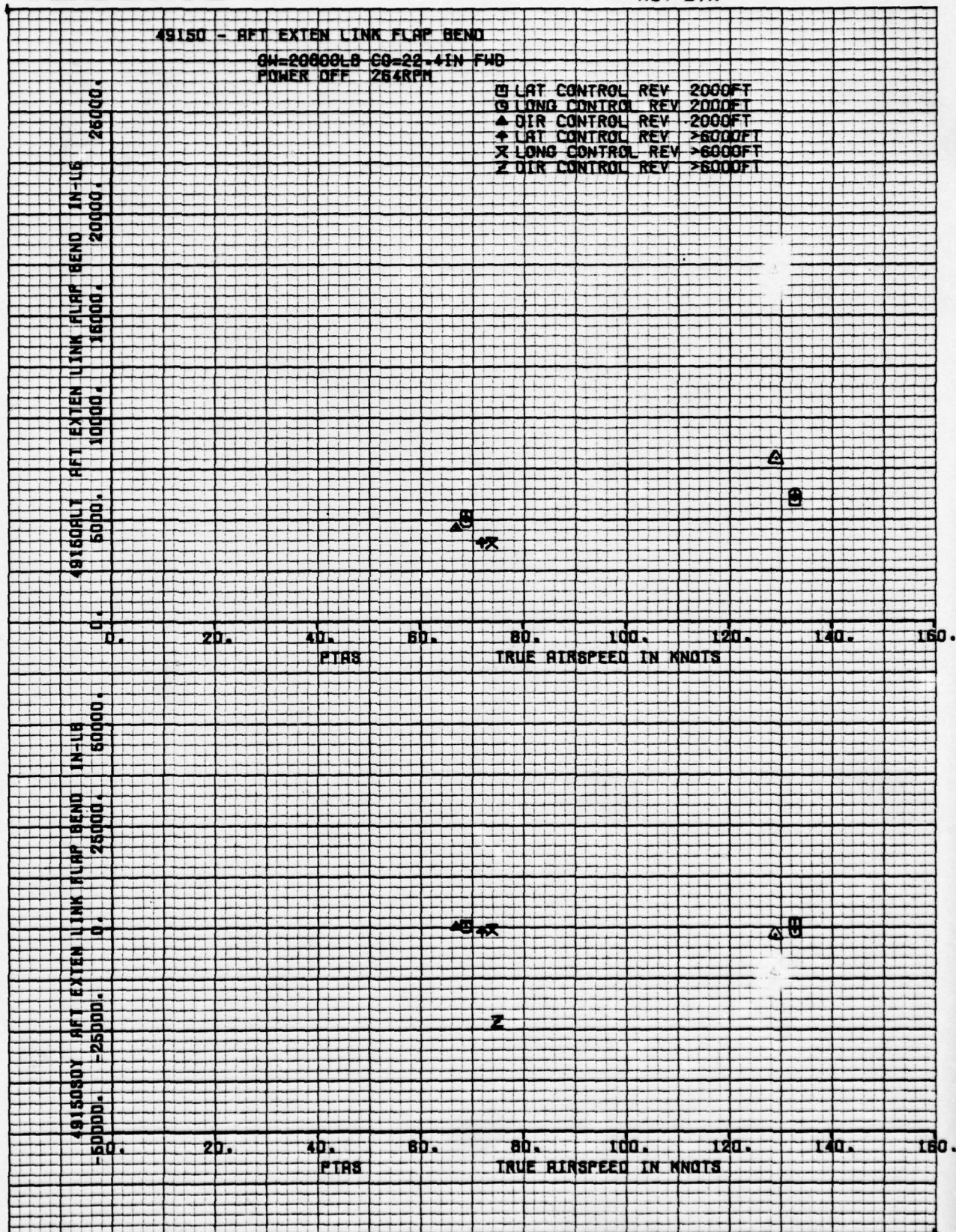




THE **BOEING** COMPANY

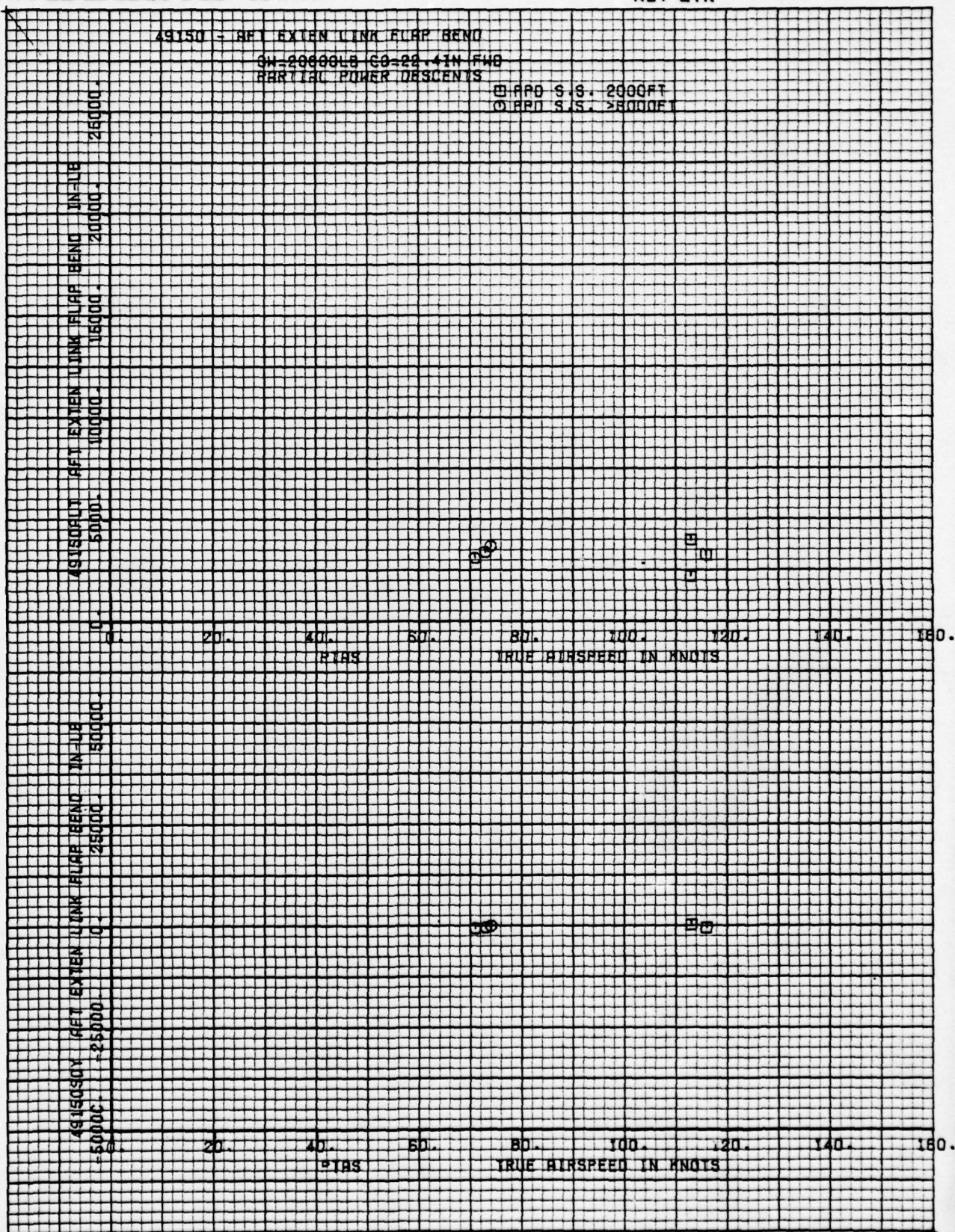
D210-11168-3
NUMBER 1 VOLUME 4
REV LTR

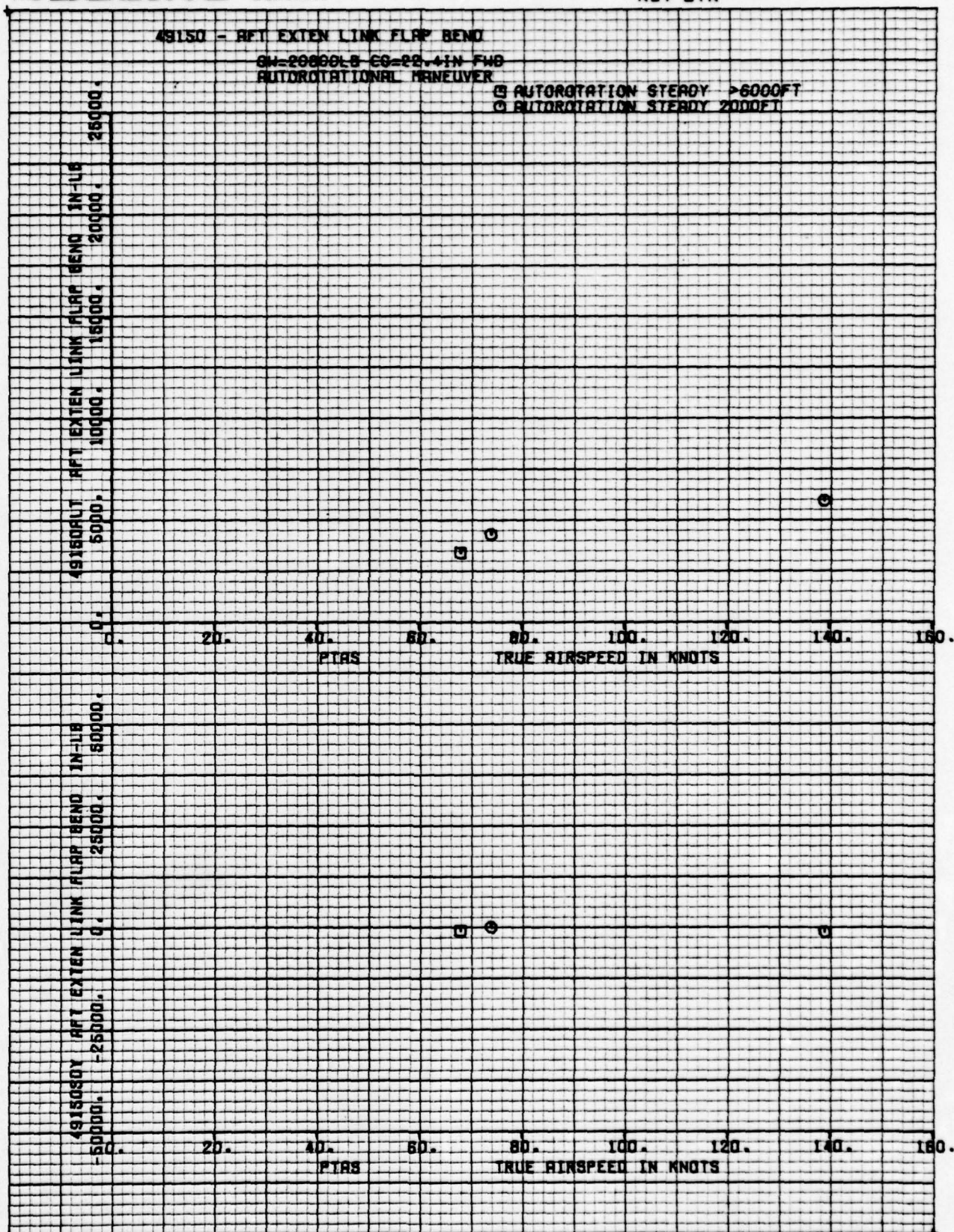


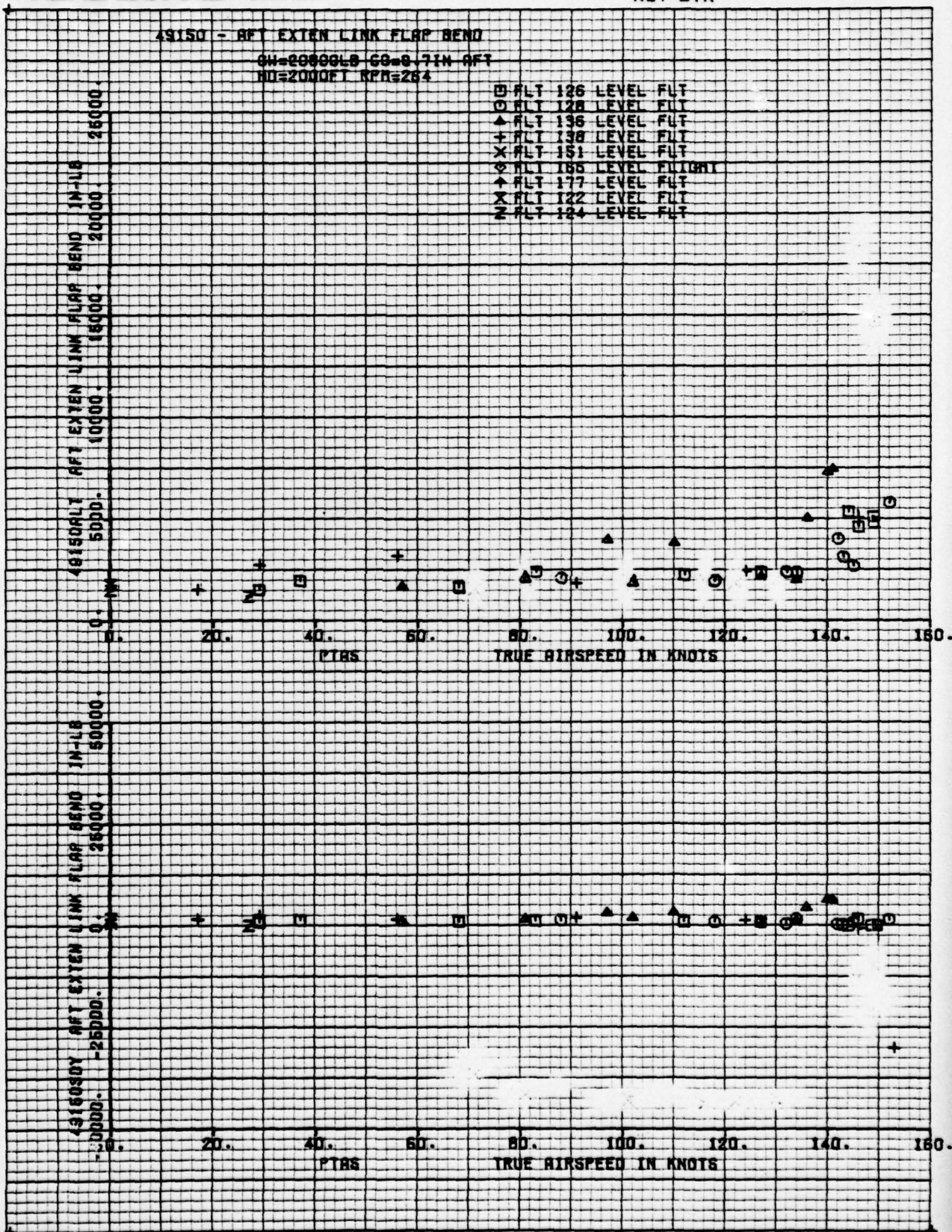


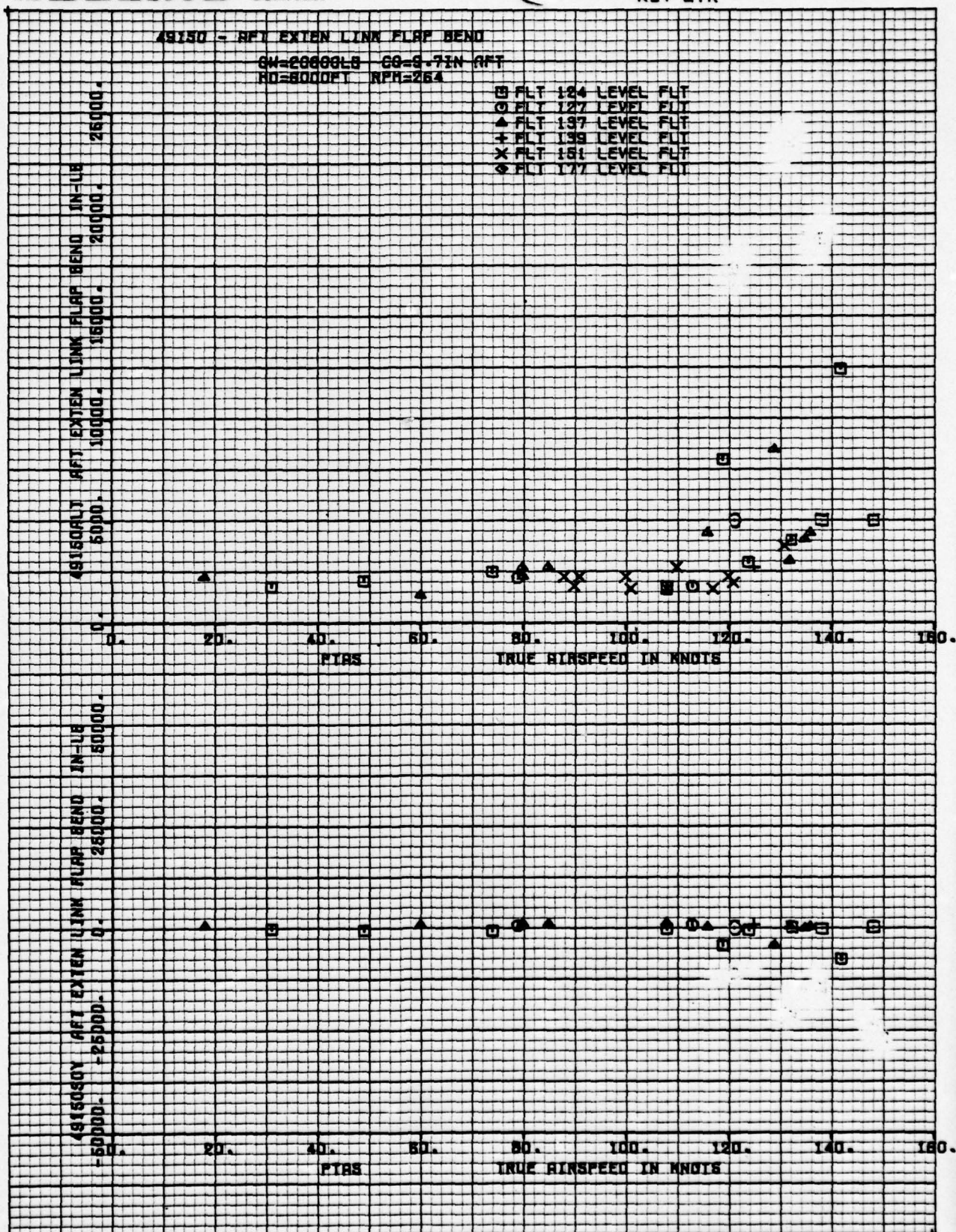
THE **BOEING** COMPANY

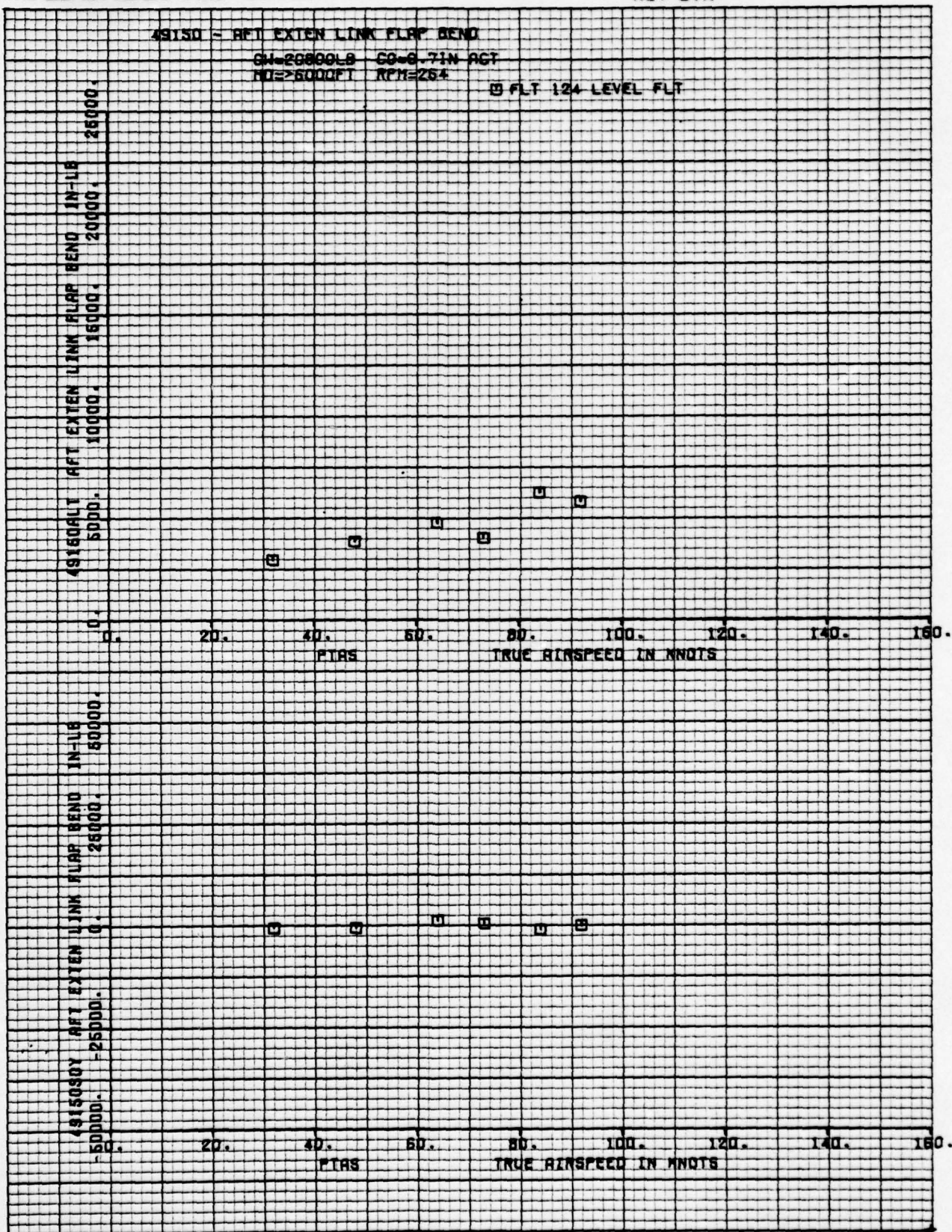
NUMBER : **D210-11168-3**
REV LTR : **VOLUME 4**

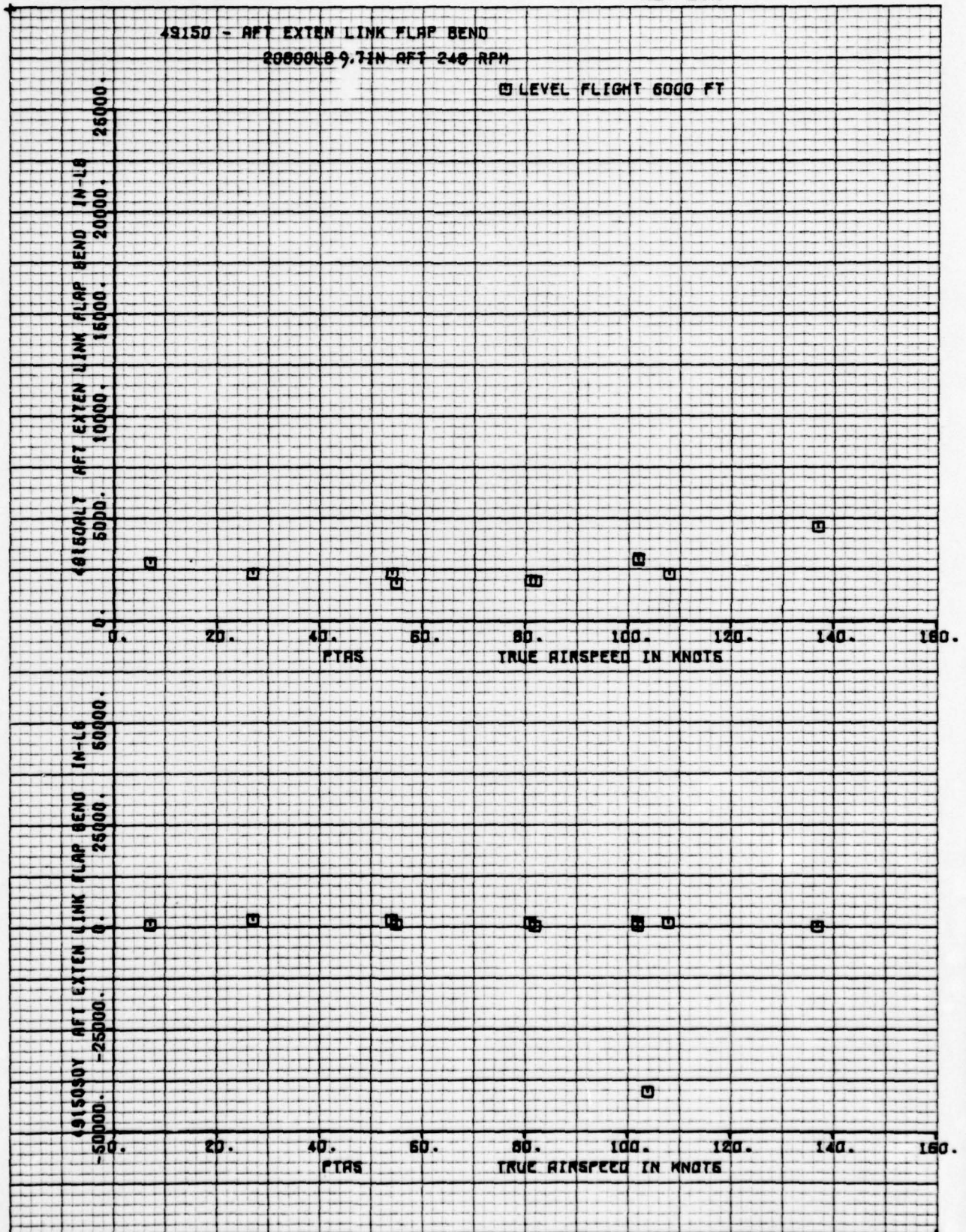


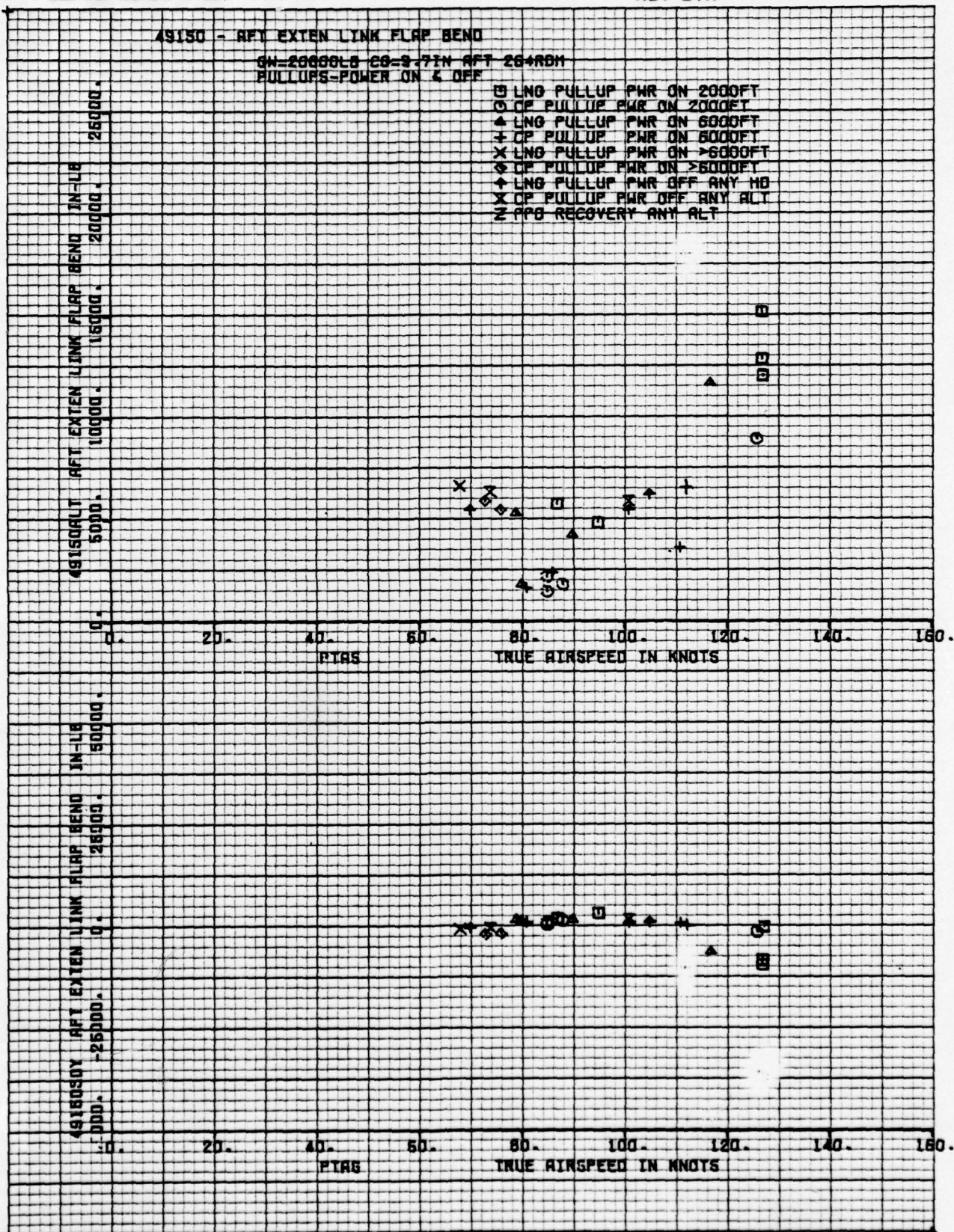


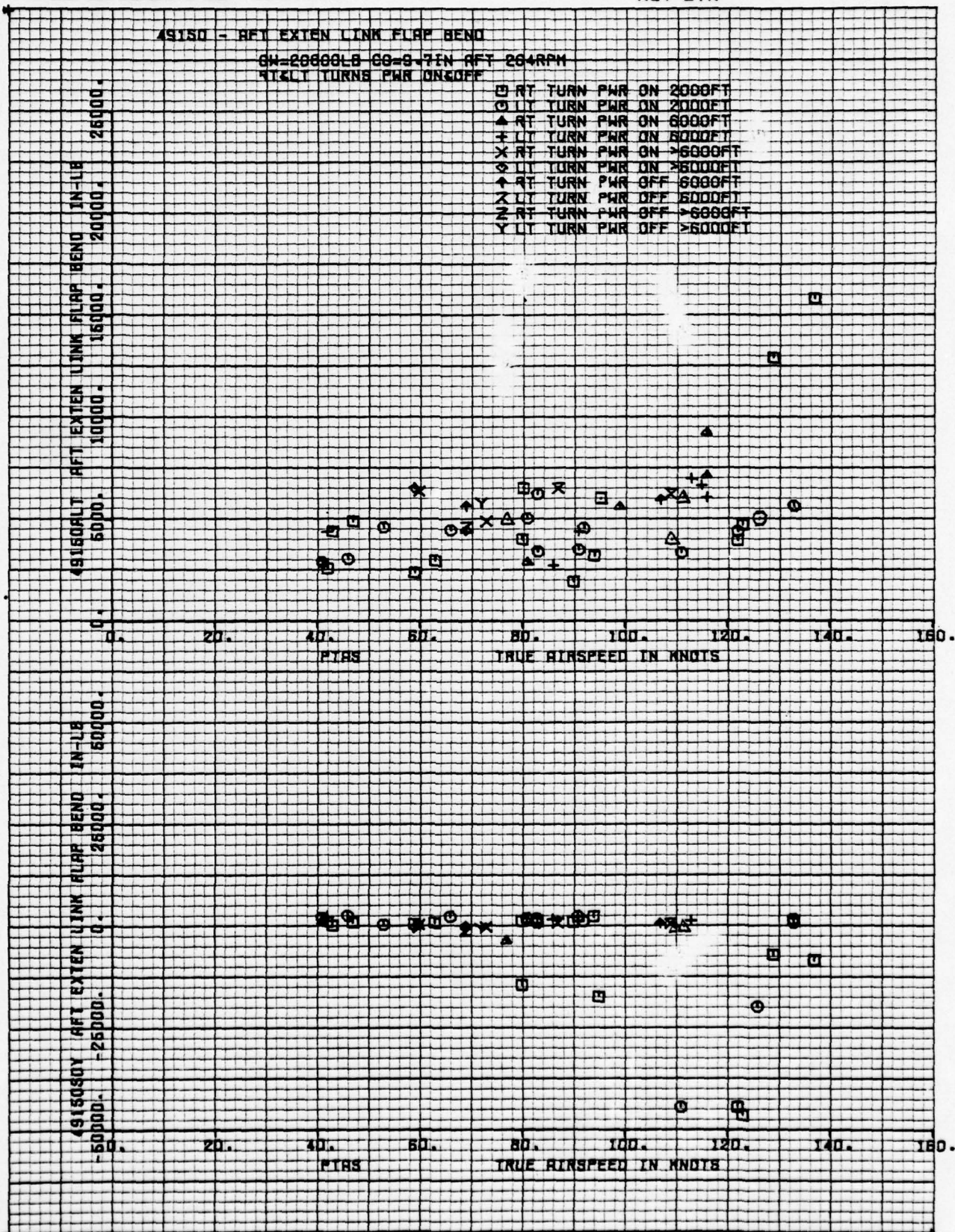


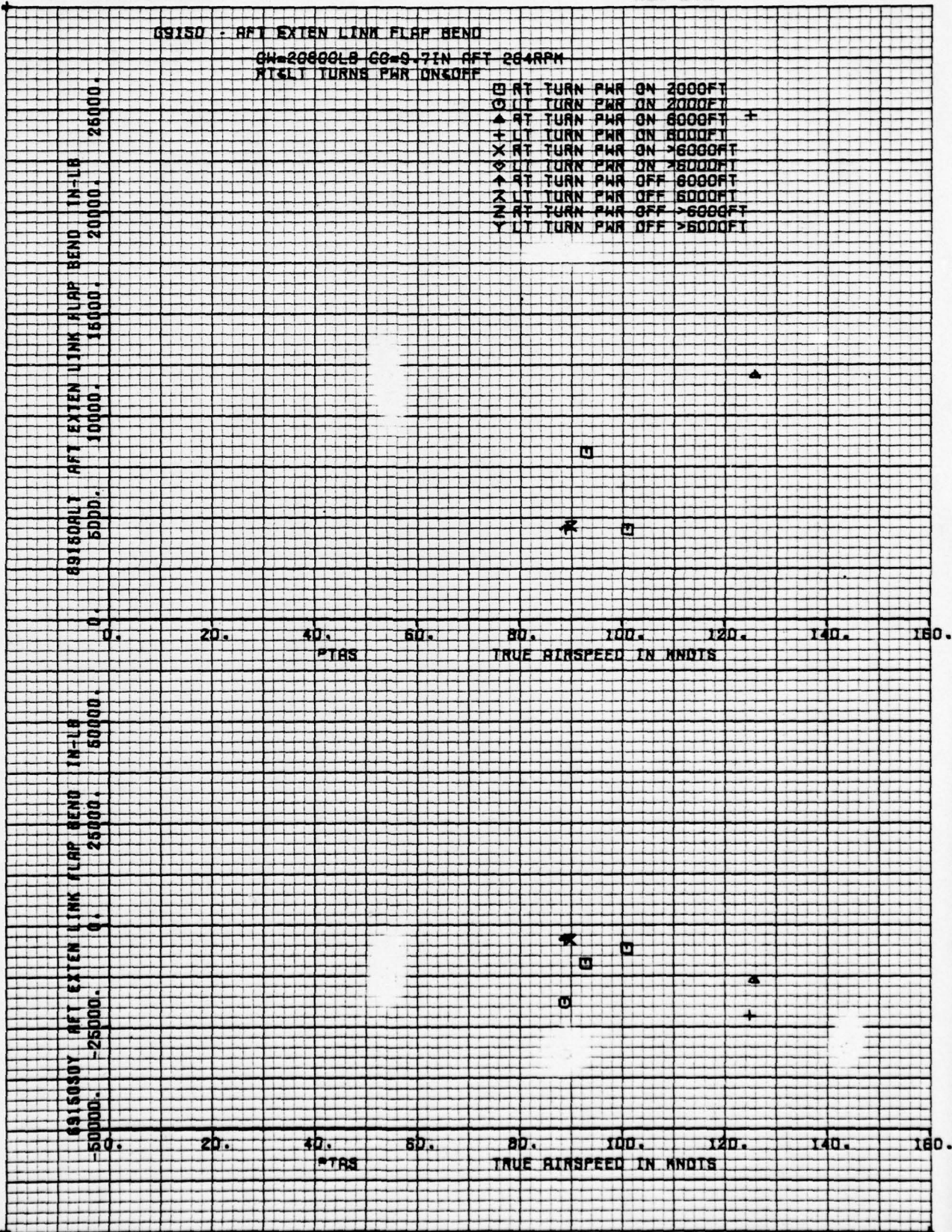


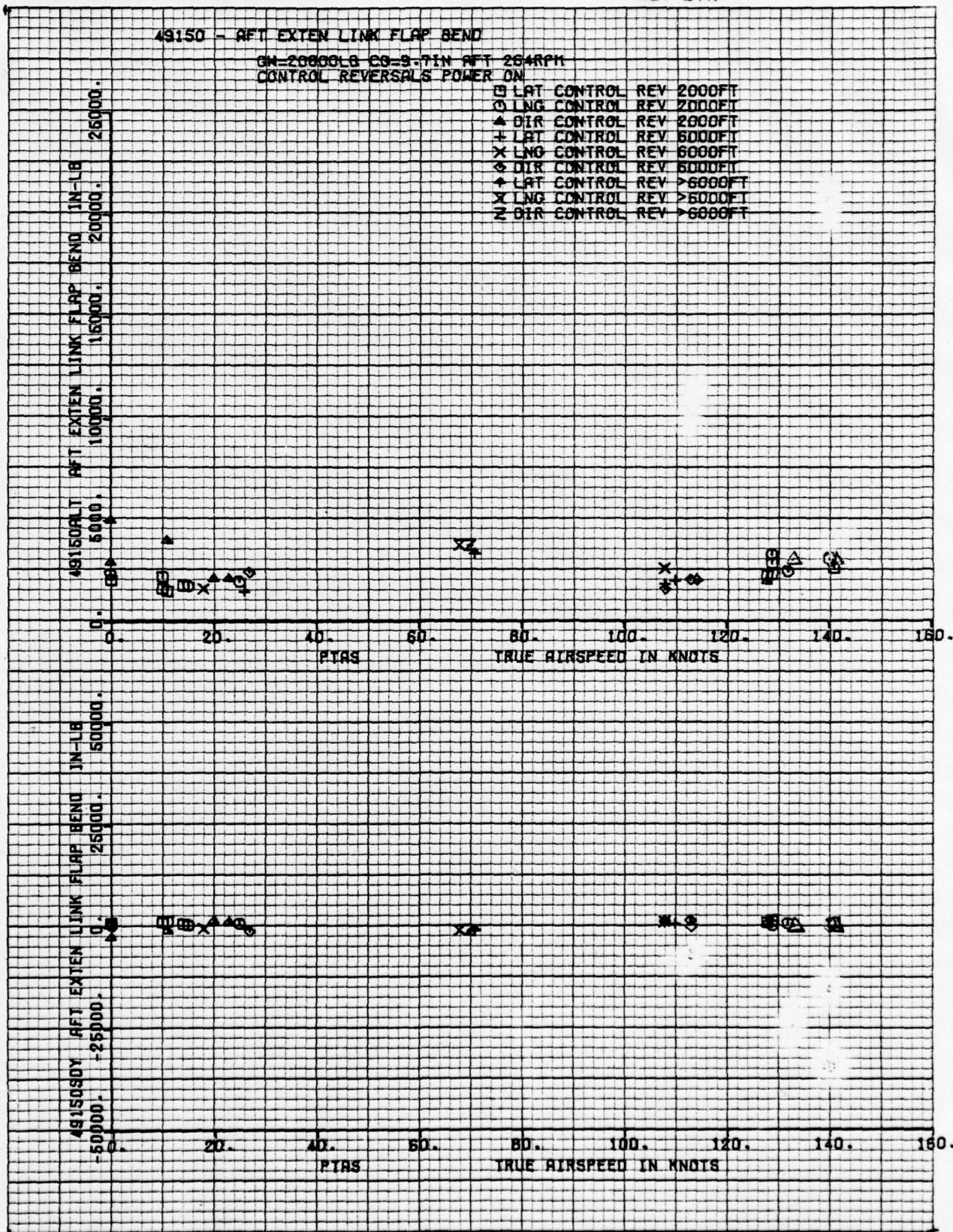


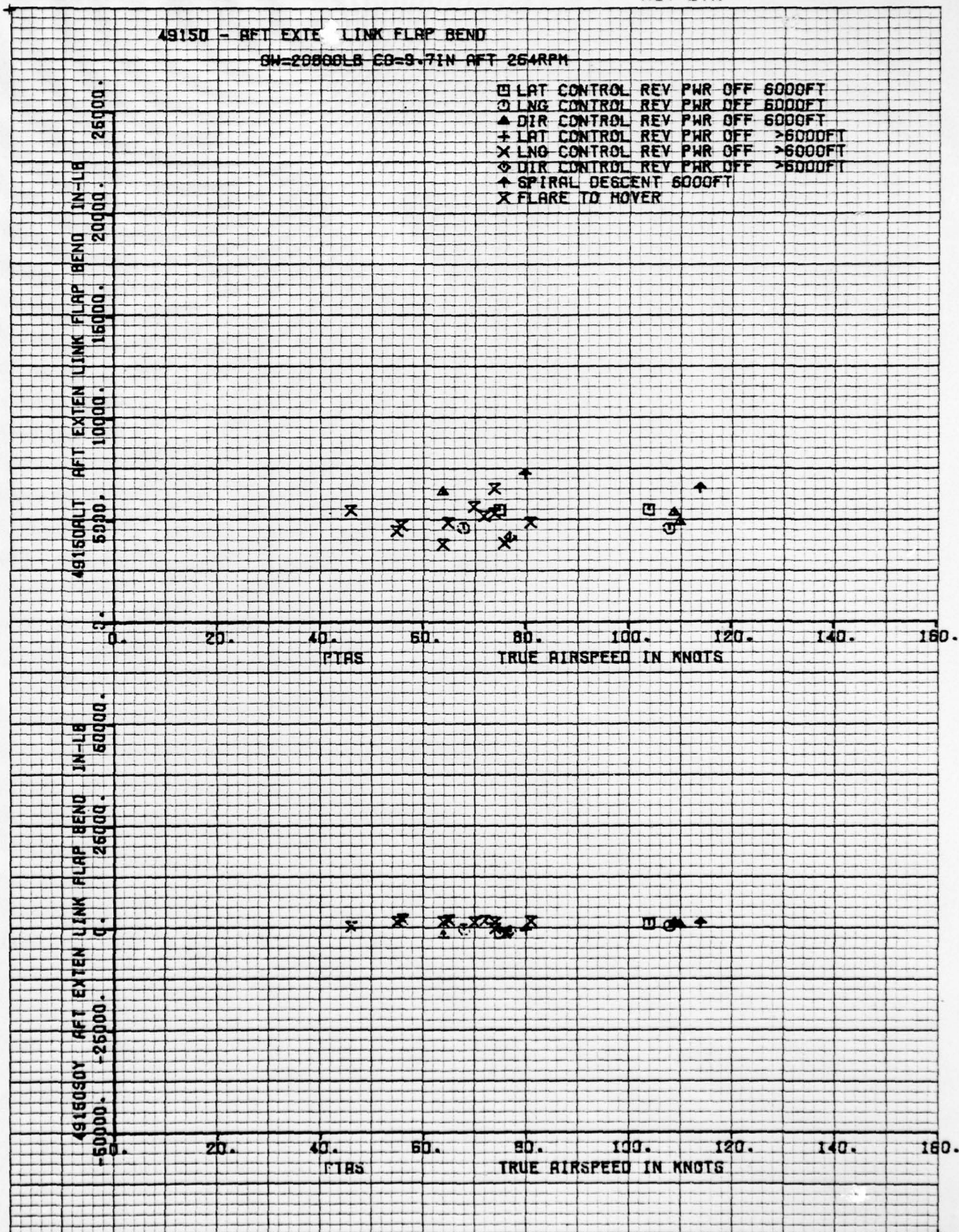


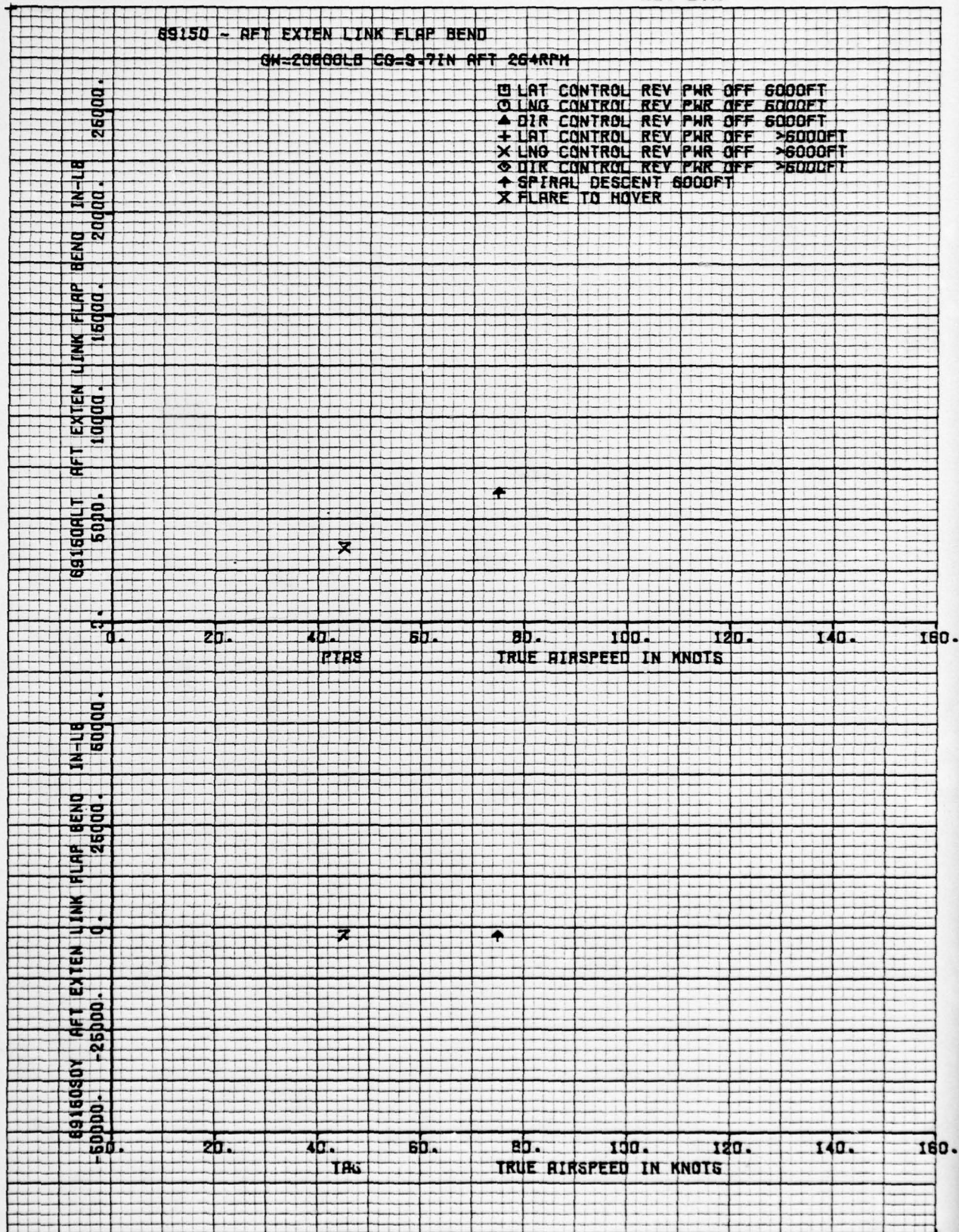








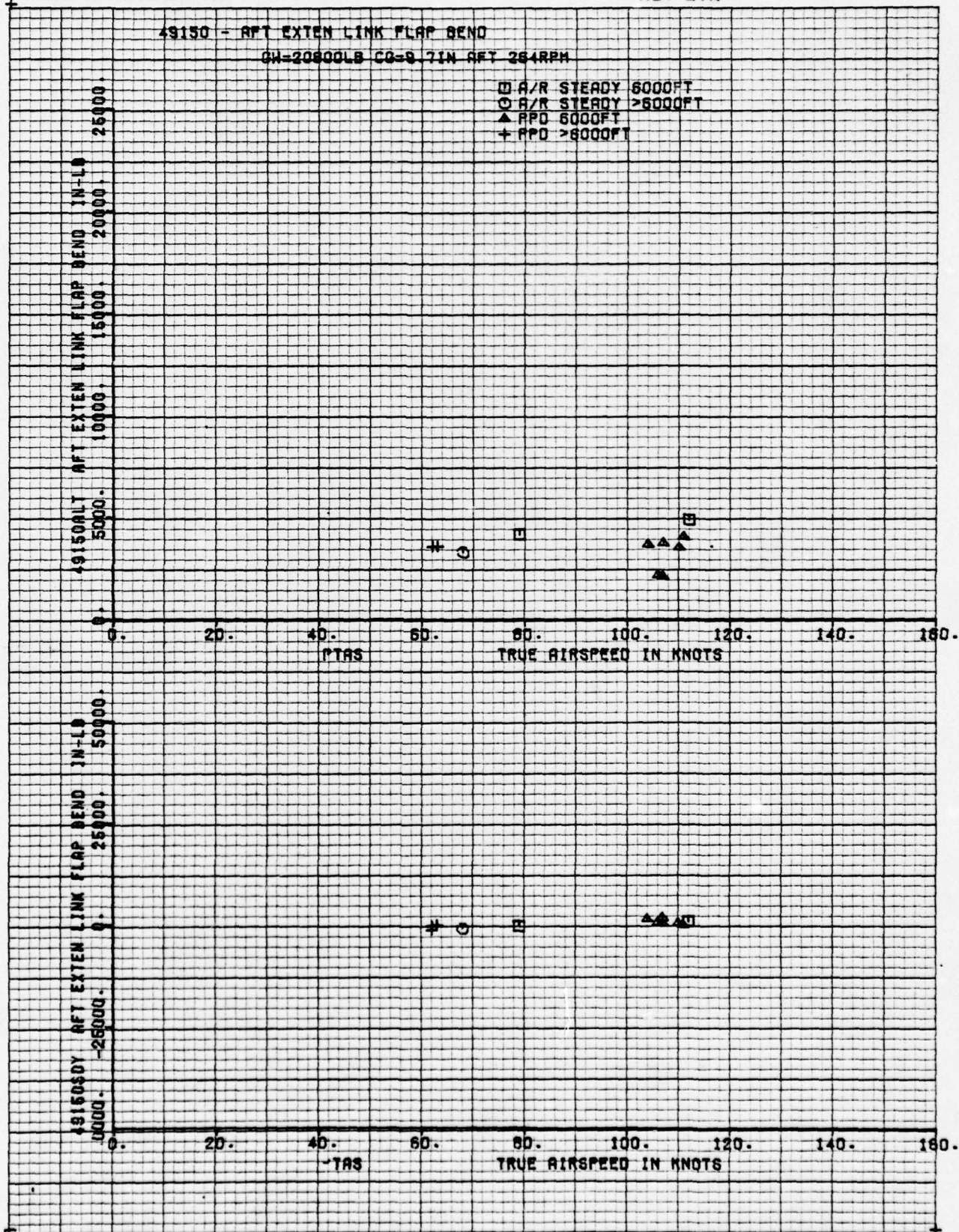


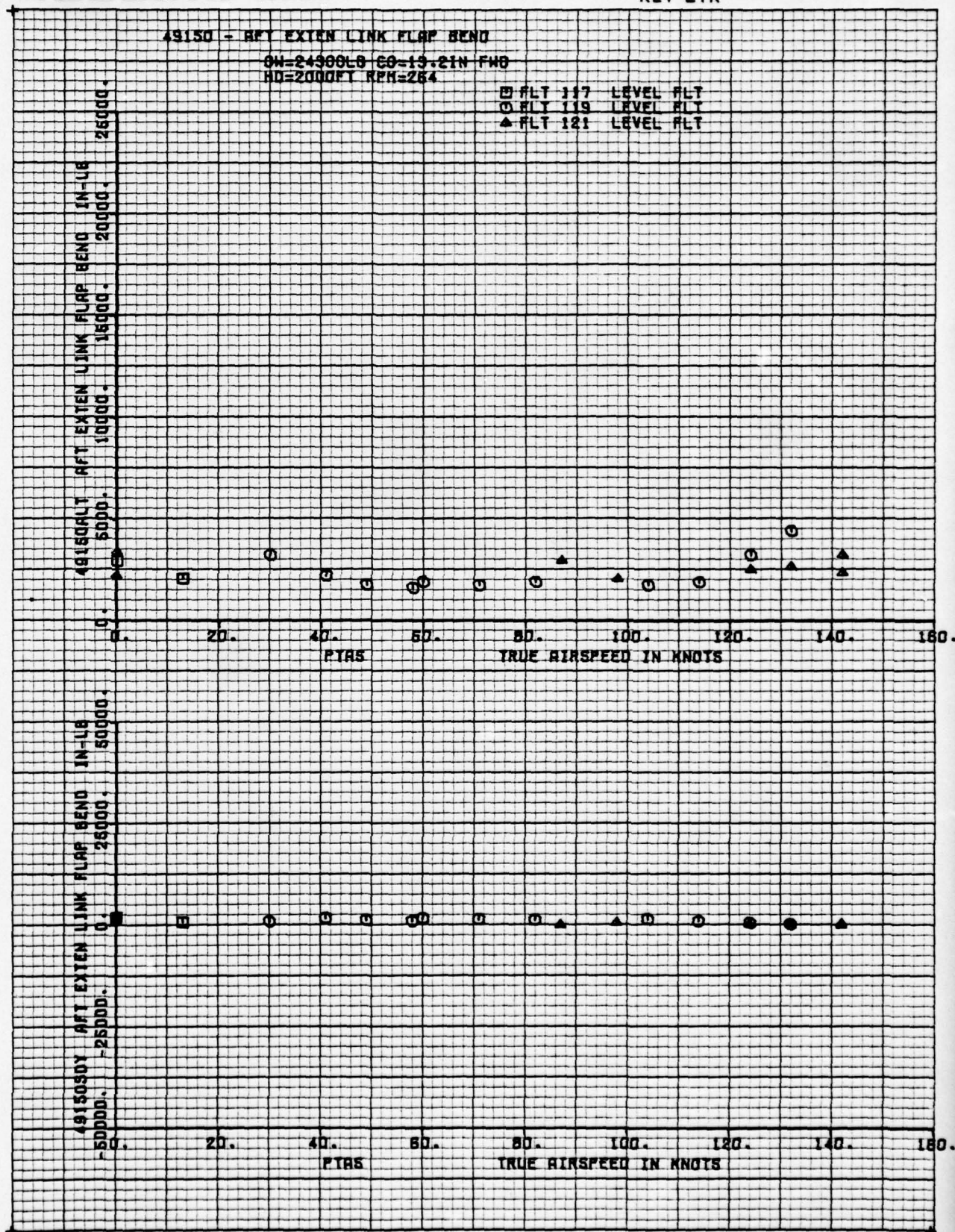


THE **BOEING** COMPANY

NUMBER
REV LTR

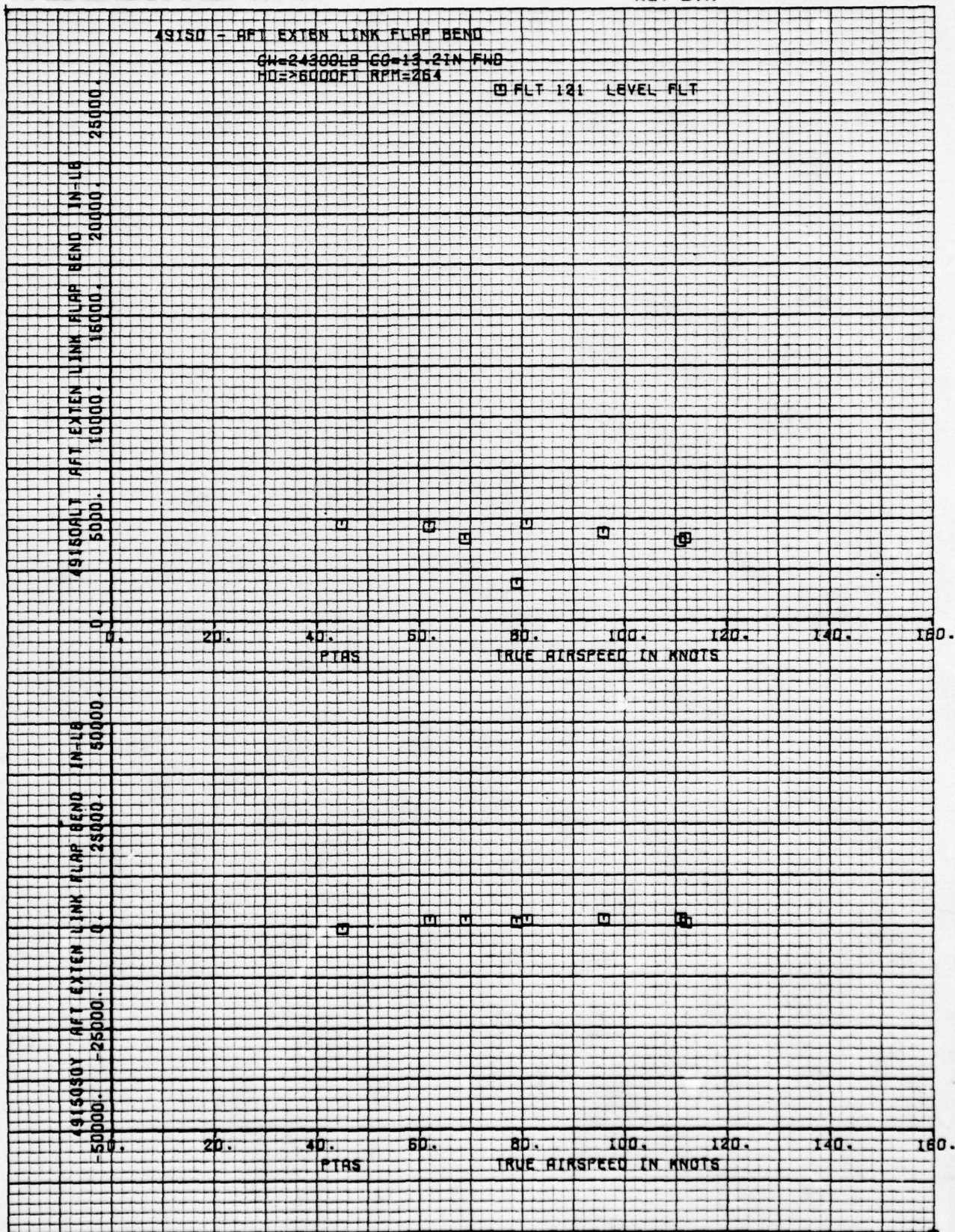
D210-11168-3
VOLUME 4

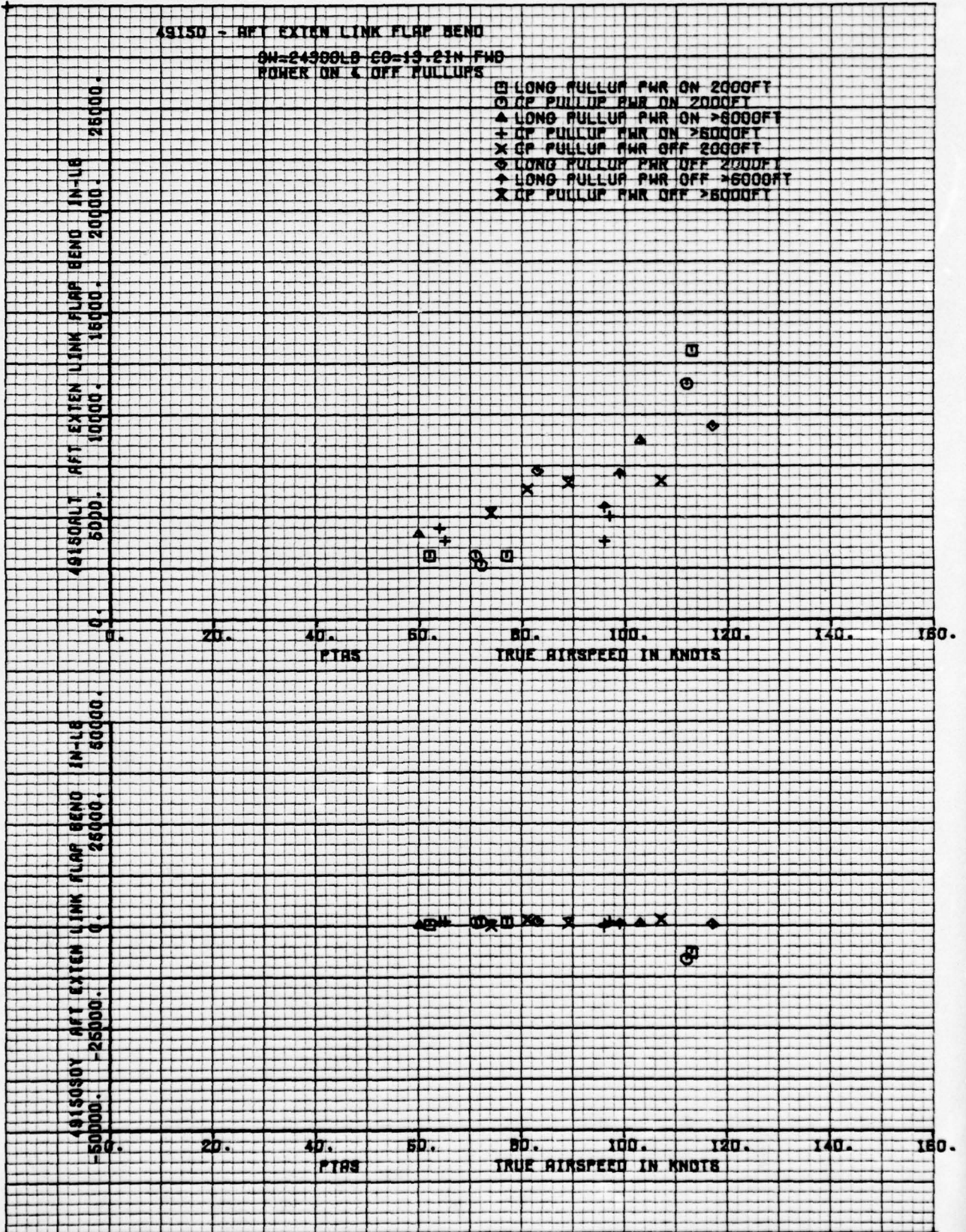


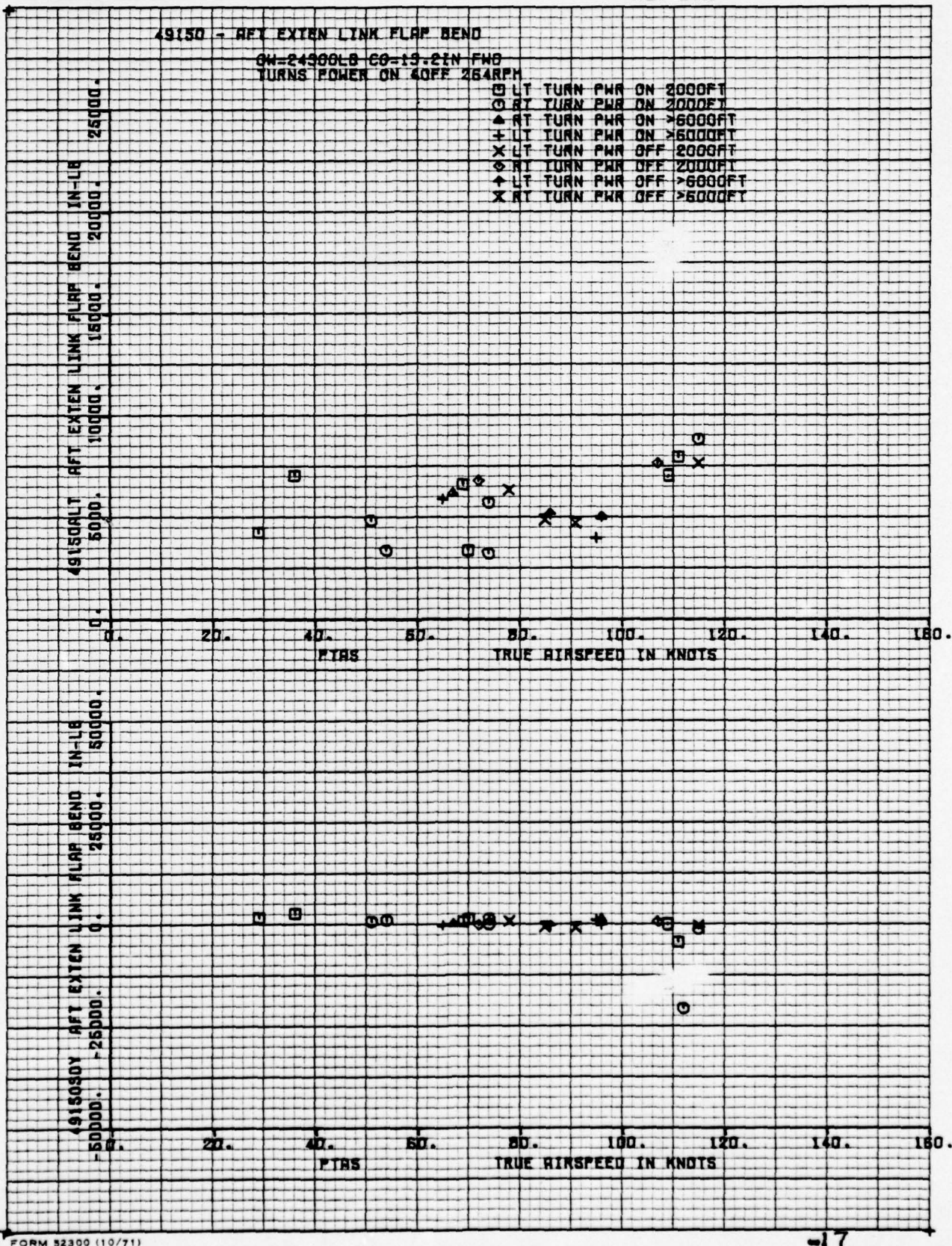


THE **BOEING** COMPANY

NUMBER **D210-11168-3**
REV LTR **VOLUME 4**



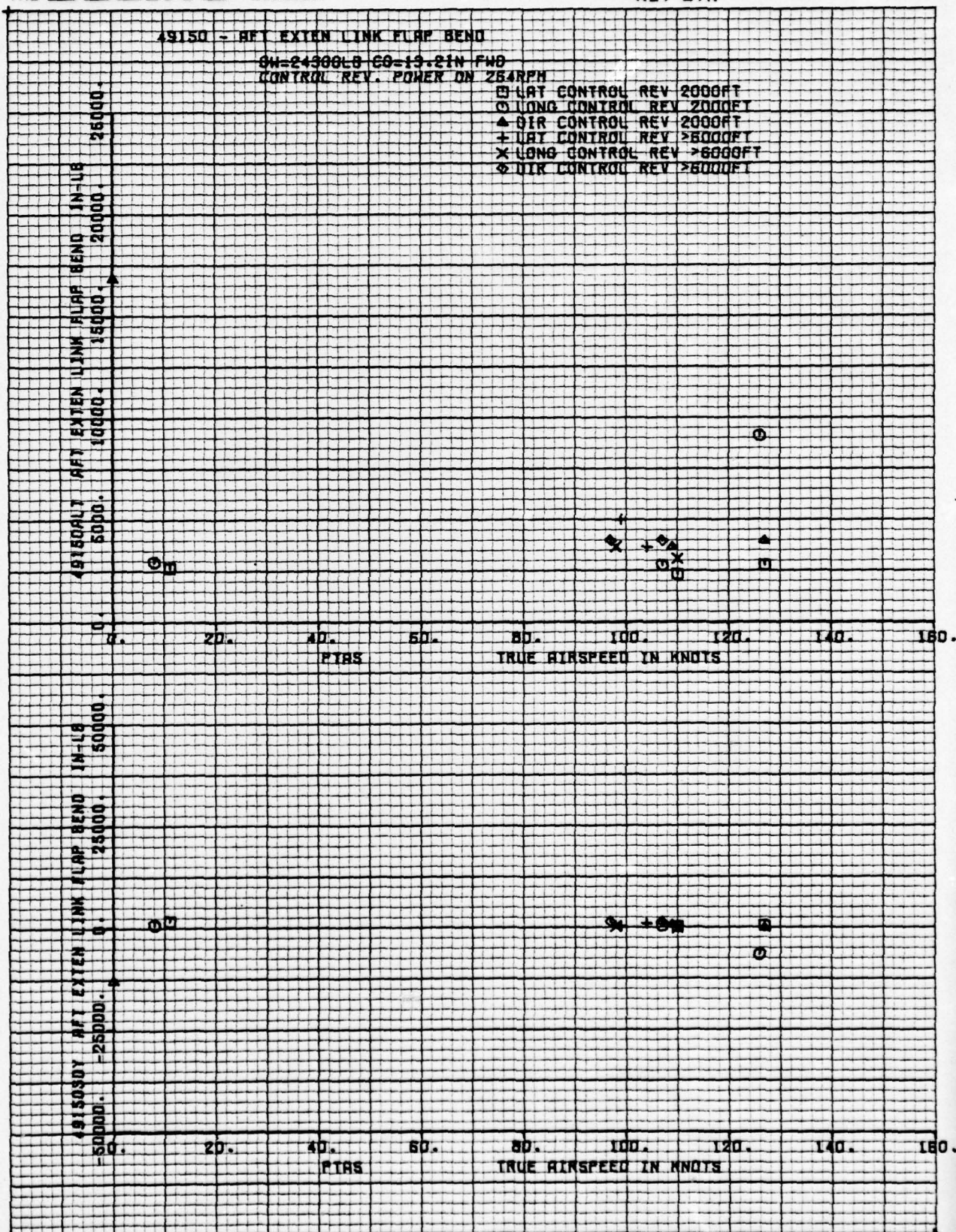




D210-11168-3

NUMBER 1 VOLUME 4
REV LTR

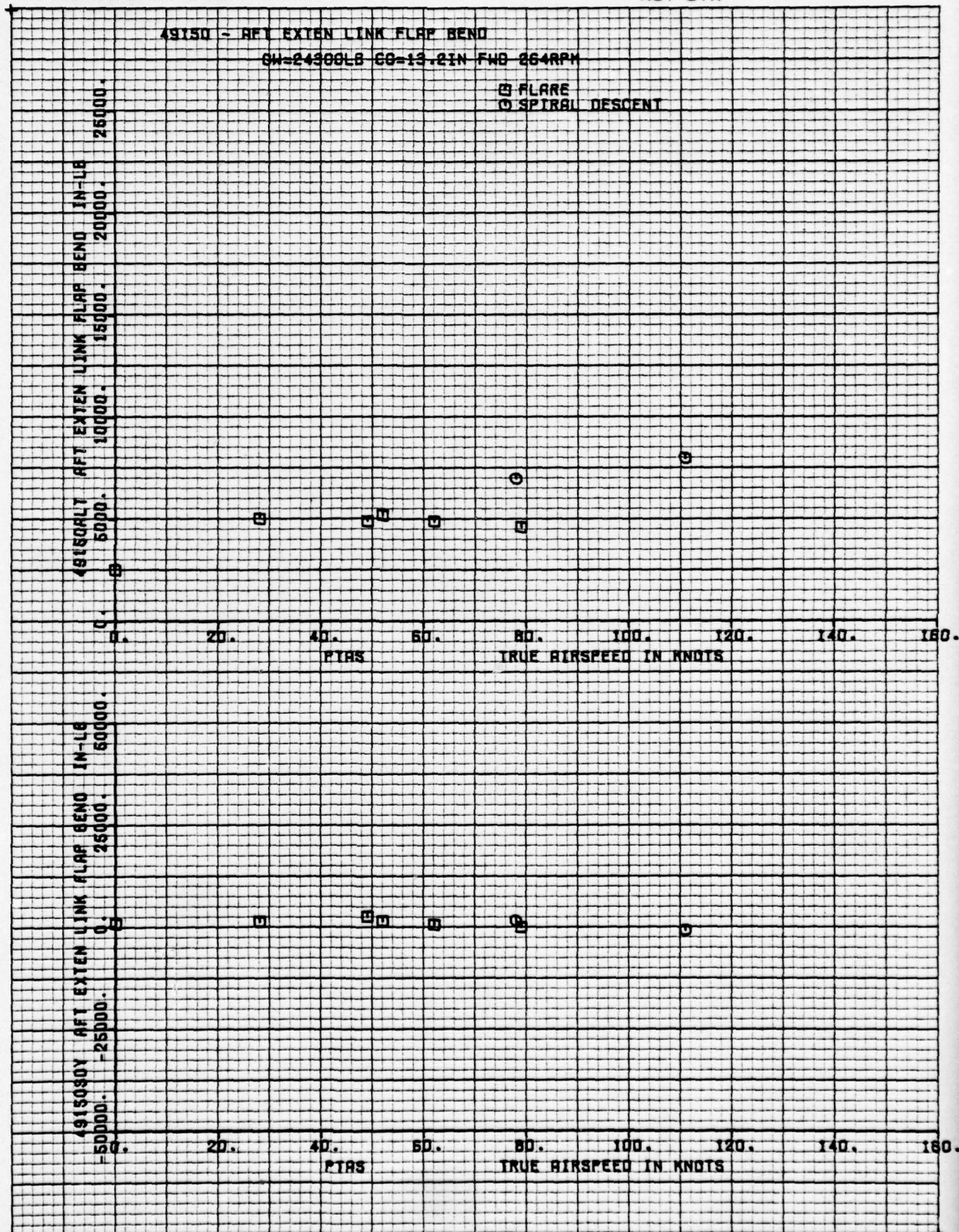
THE **BOEING** COMPANY

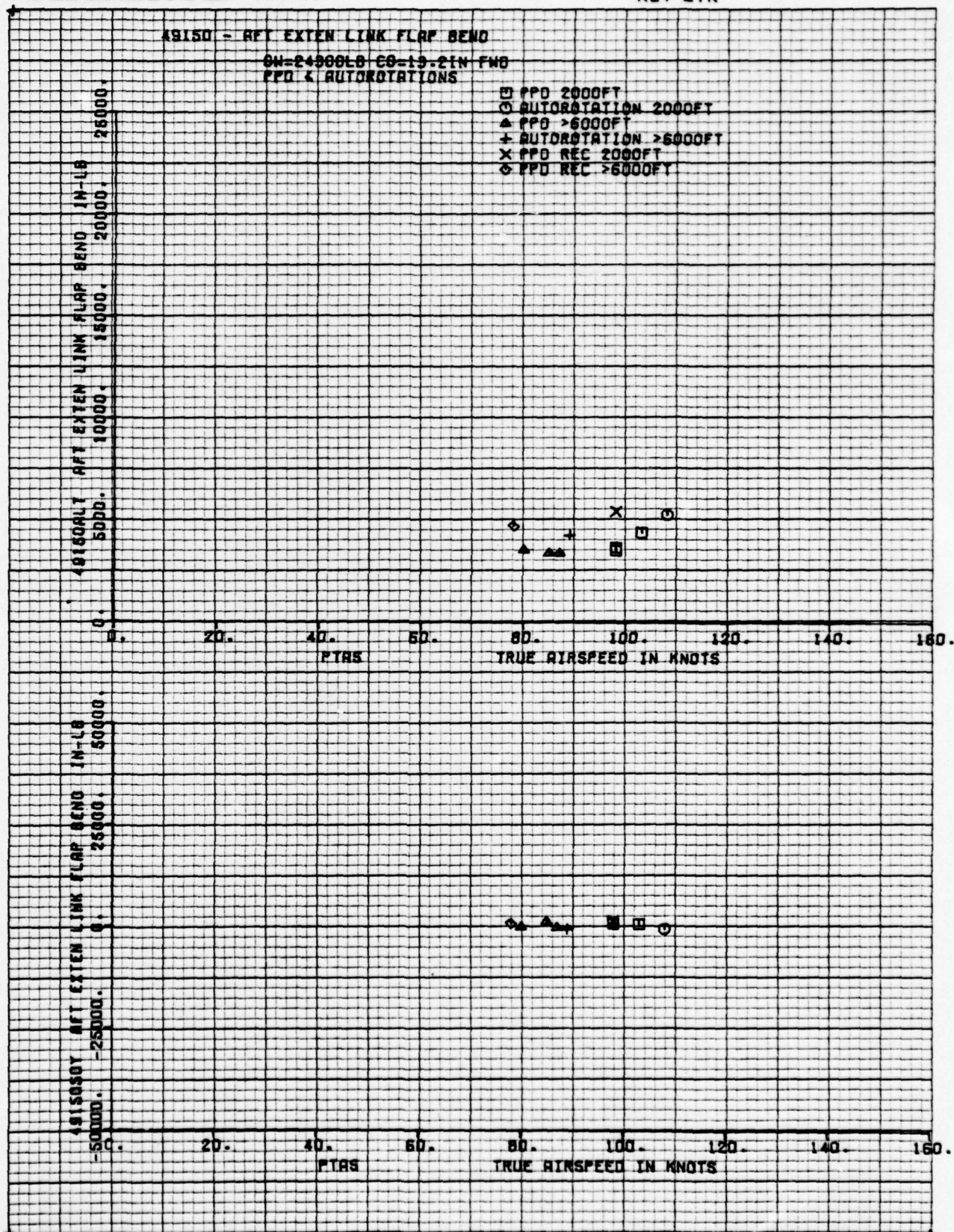


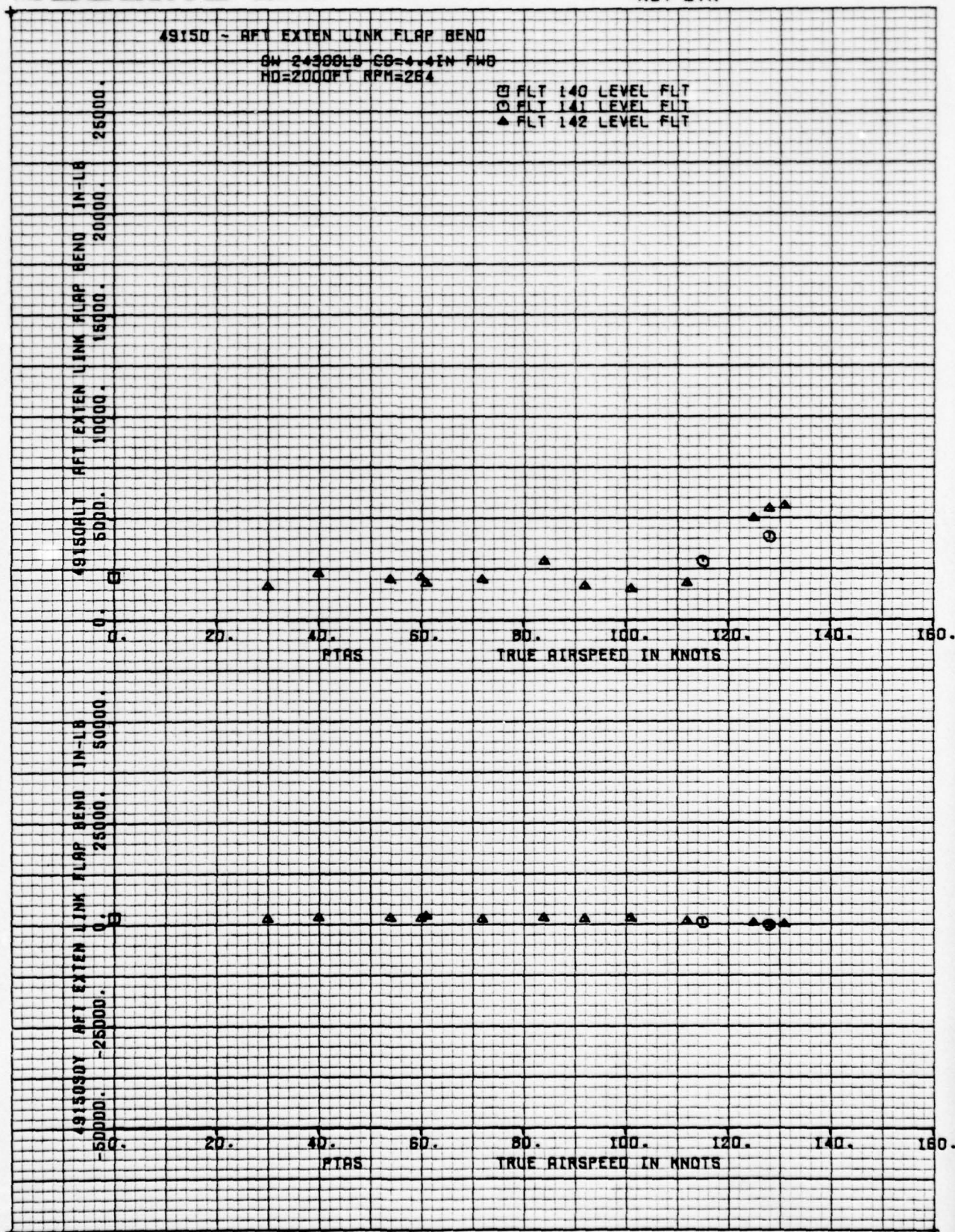
D210-11168-3

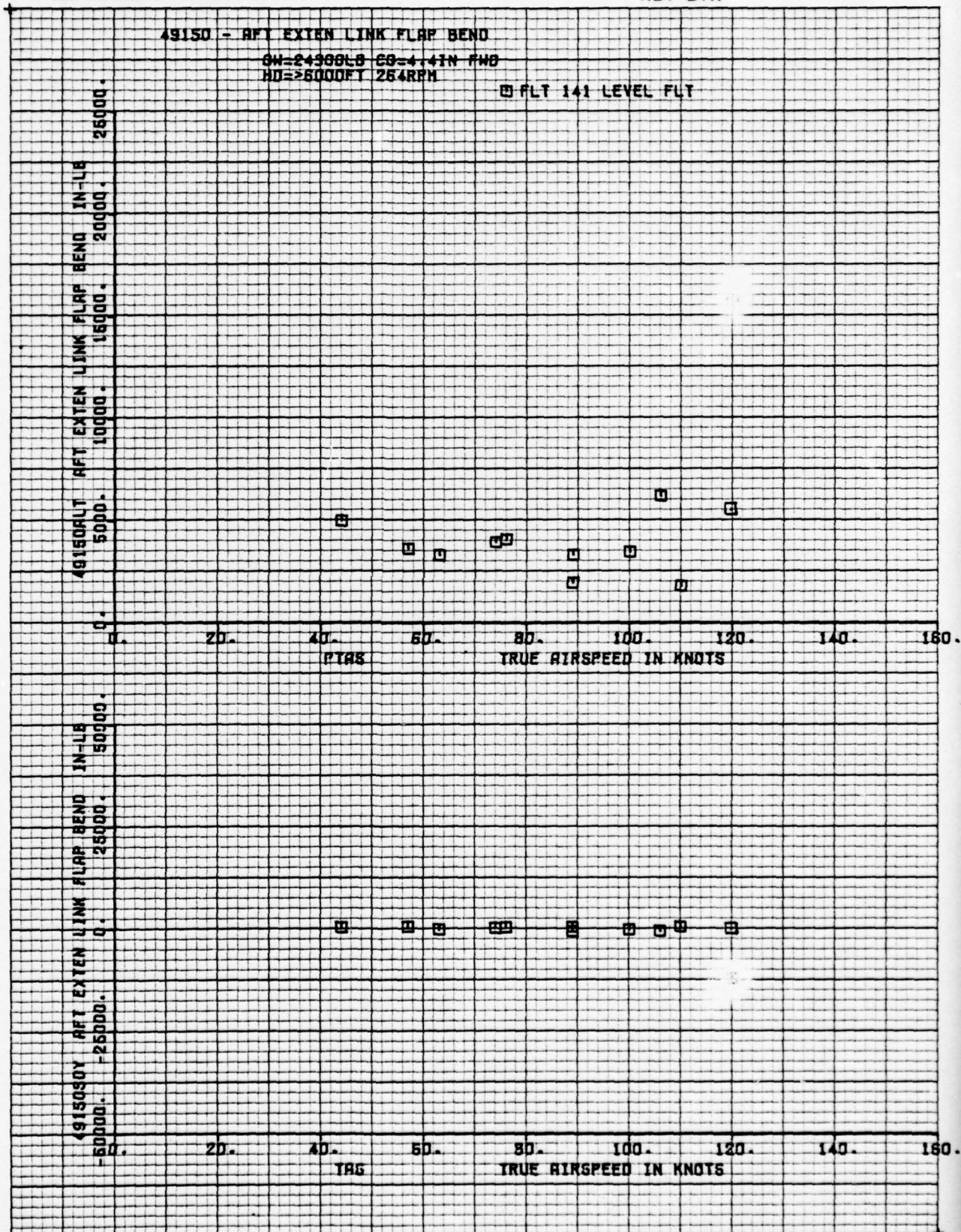
NUMBER 1 VOLUME 4
REV LTR

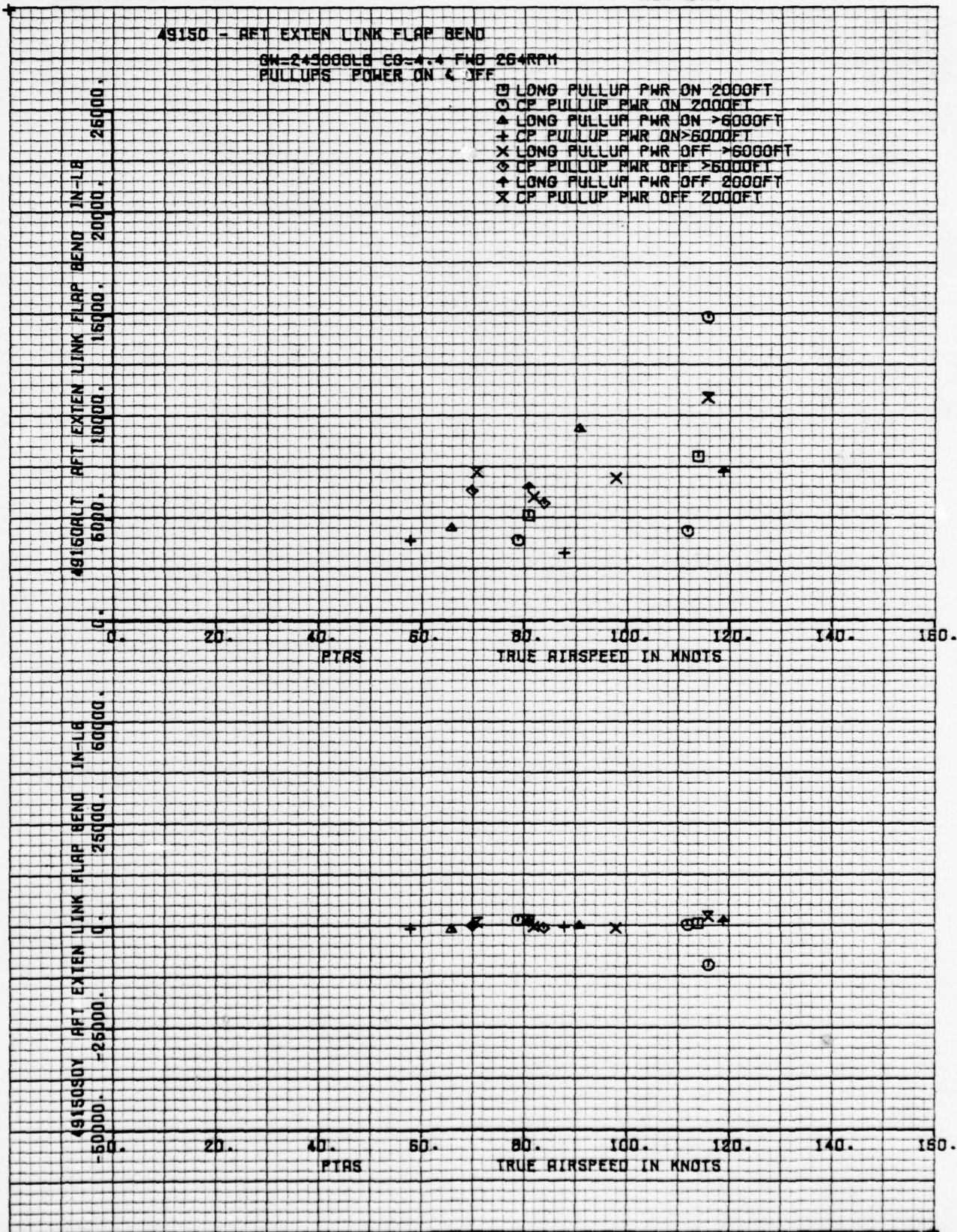
THE **BOEING** COMPANY

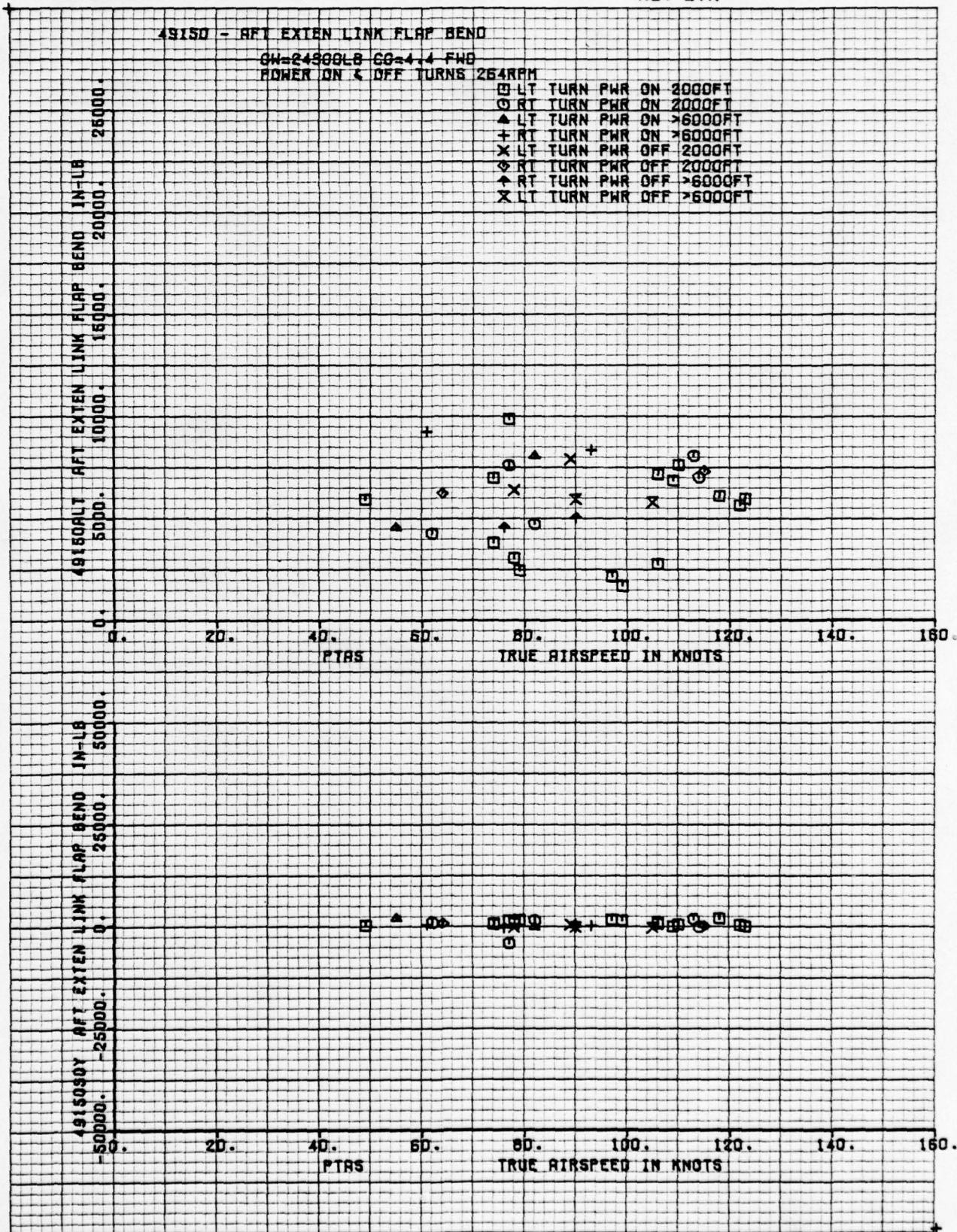


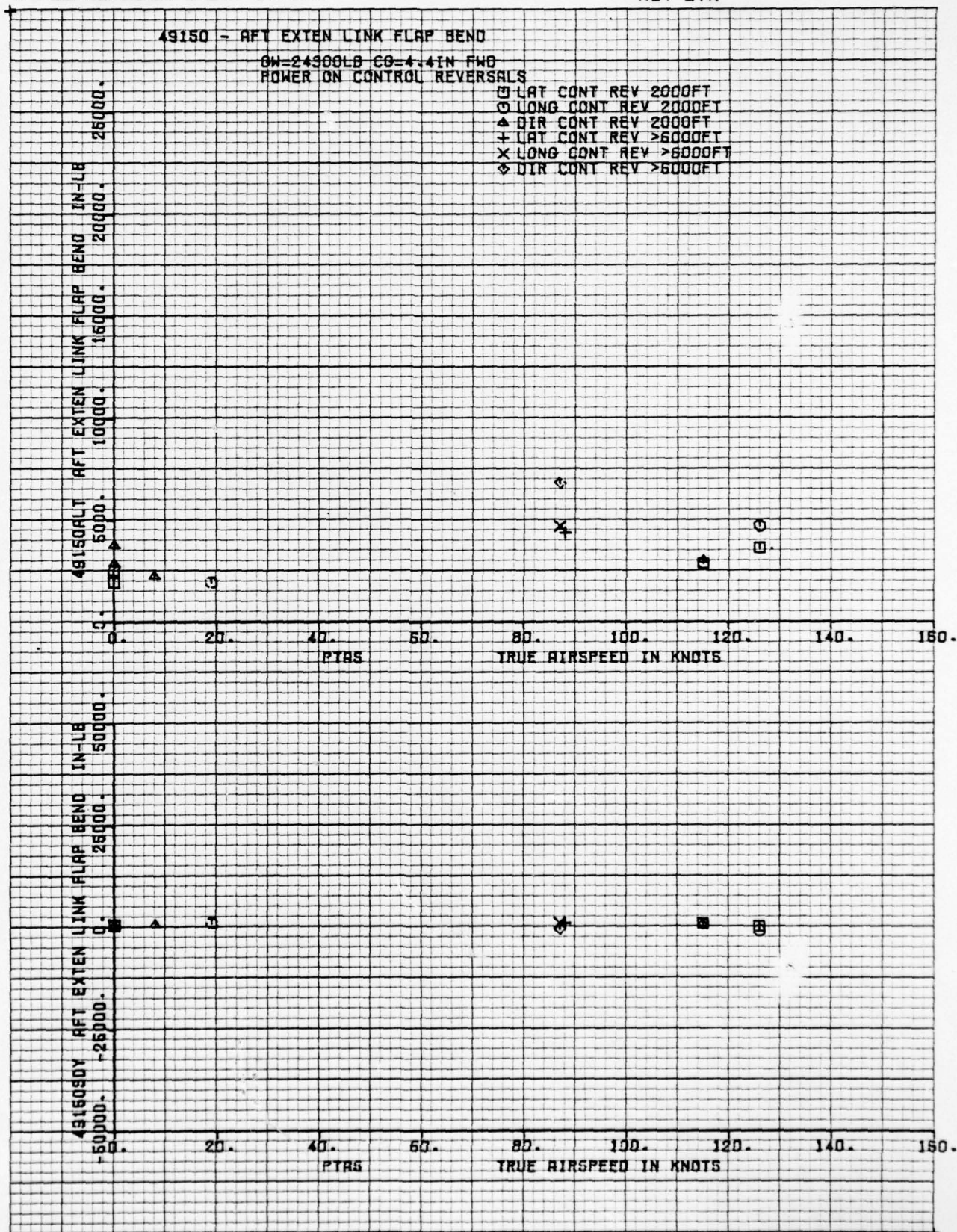


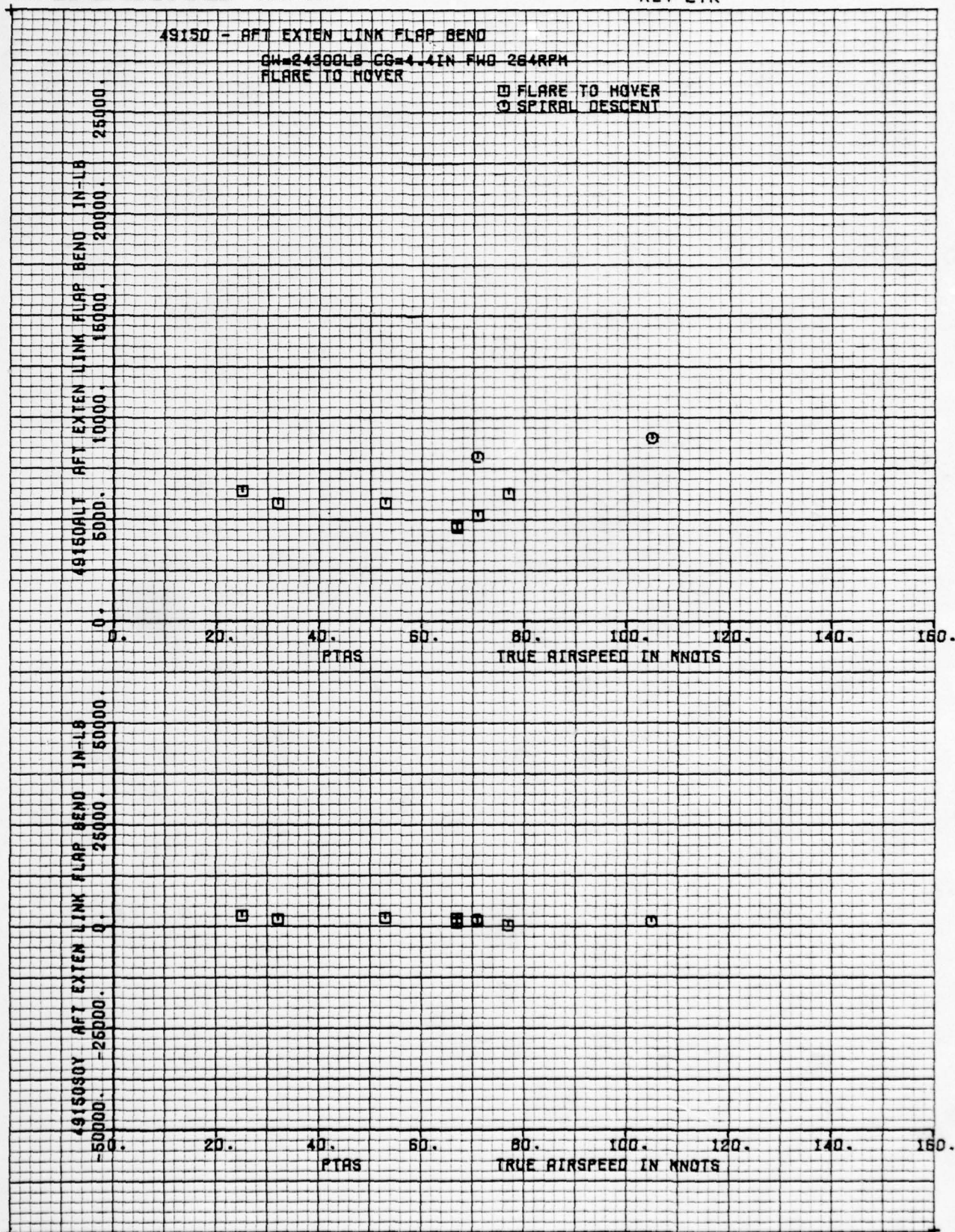








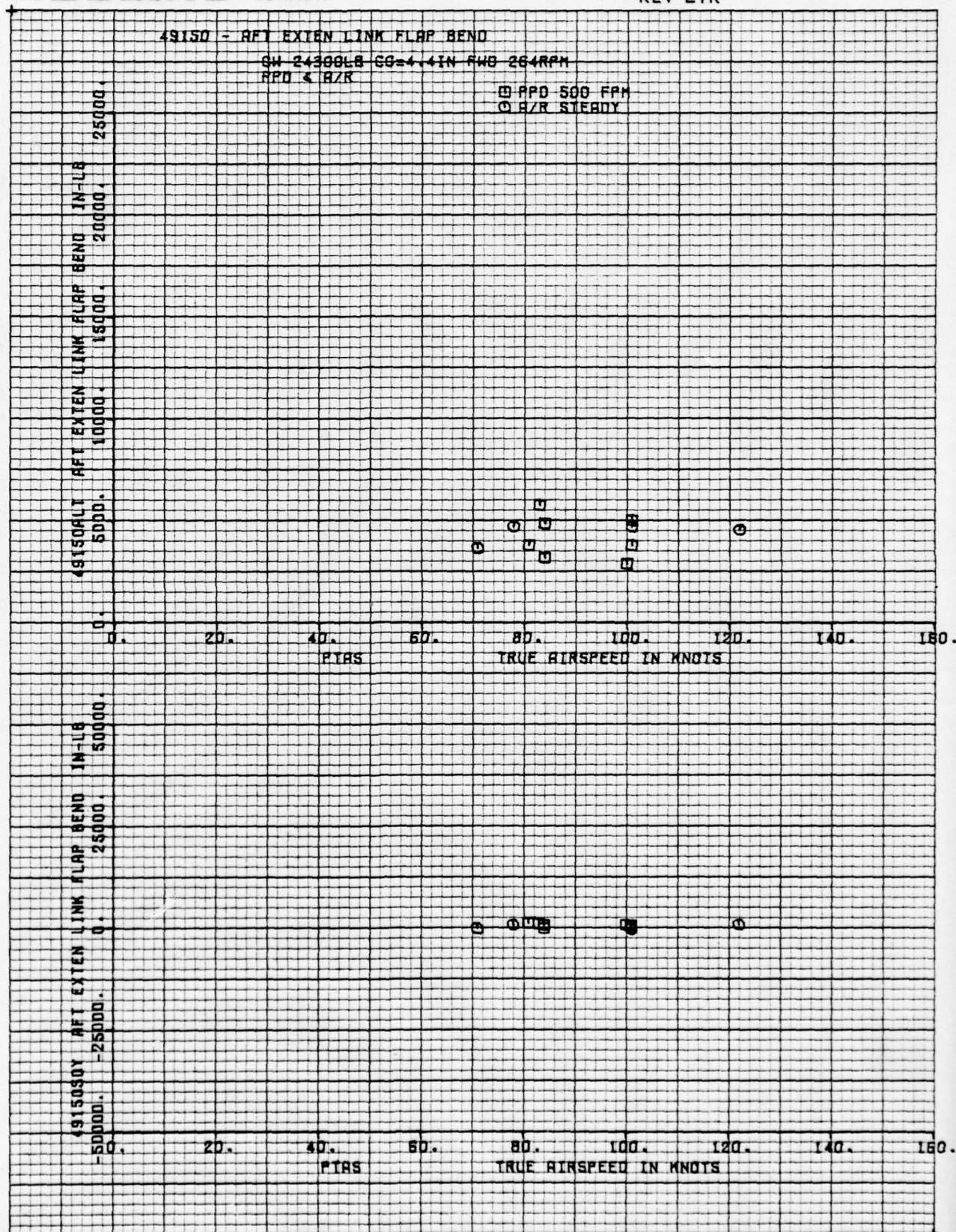




D210-11168-3

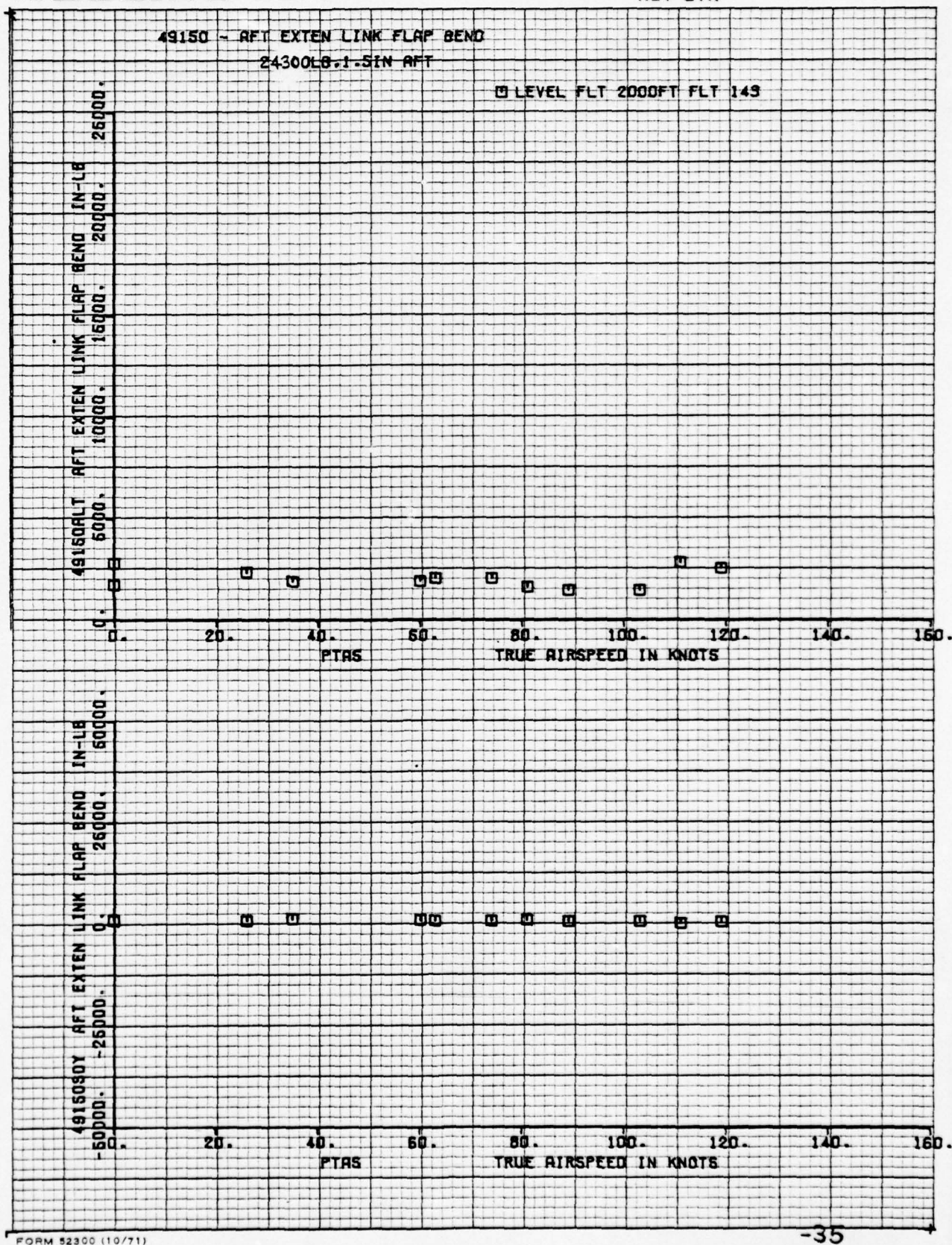
NUMBER VOLUME 4
REV LTR

THE **BOEING** COMPANY



THE **BOEING** COMPANY

D210-11168-3
NUMBER 1 VOLUME 4
REV LTR



THE **BOEING** COMPANY

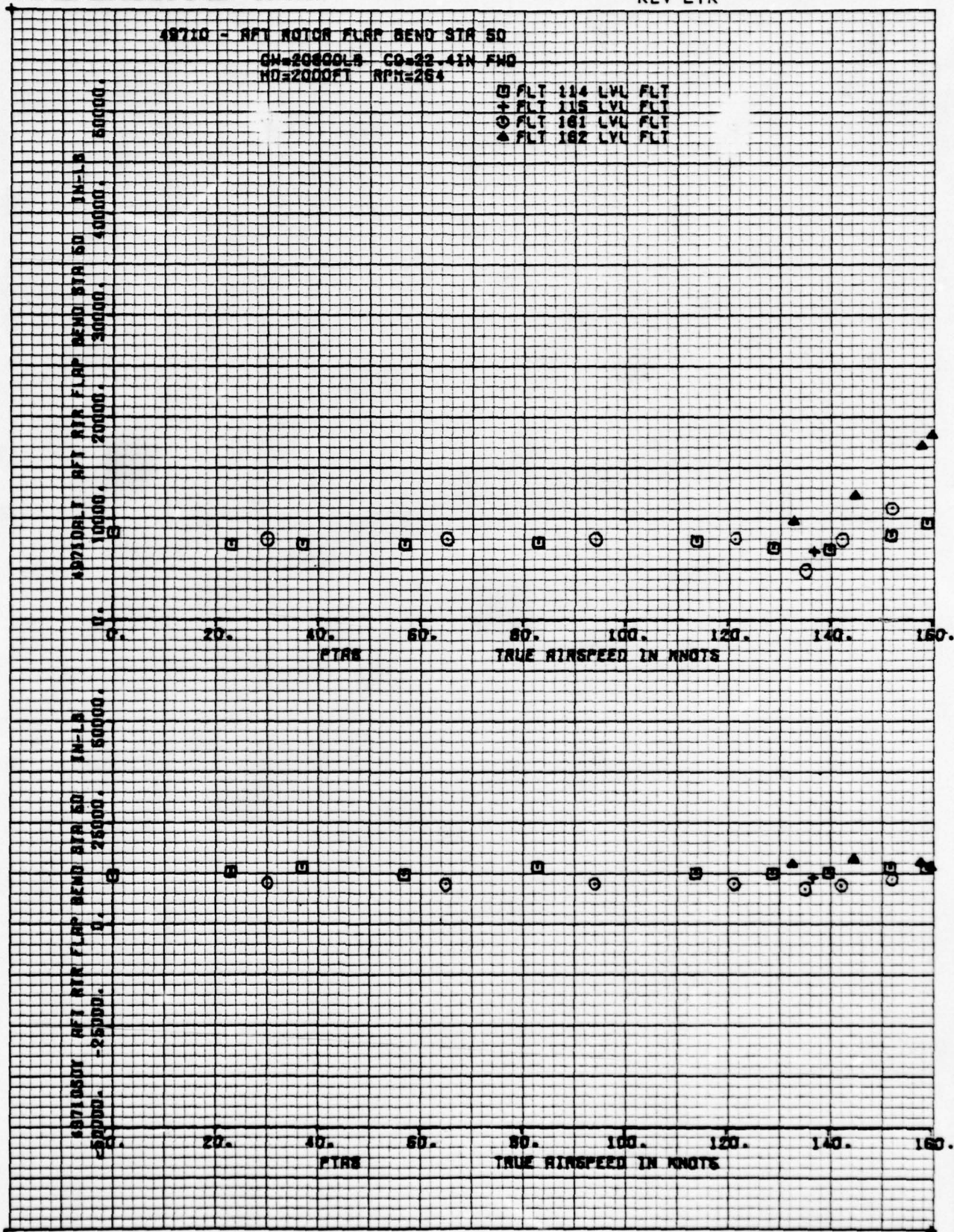
PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/28/78

NUMBER D210-11168-3
REV LTR Volume 4
MODEL NO.

4.5 Aft Blade Flap Bending Station 50.

THE **BOEING** COMPANY

D210-11168-3
NUMBER 1 VOLUME 4
REV LTR



FORM 52300 (10/71)

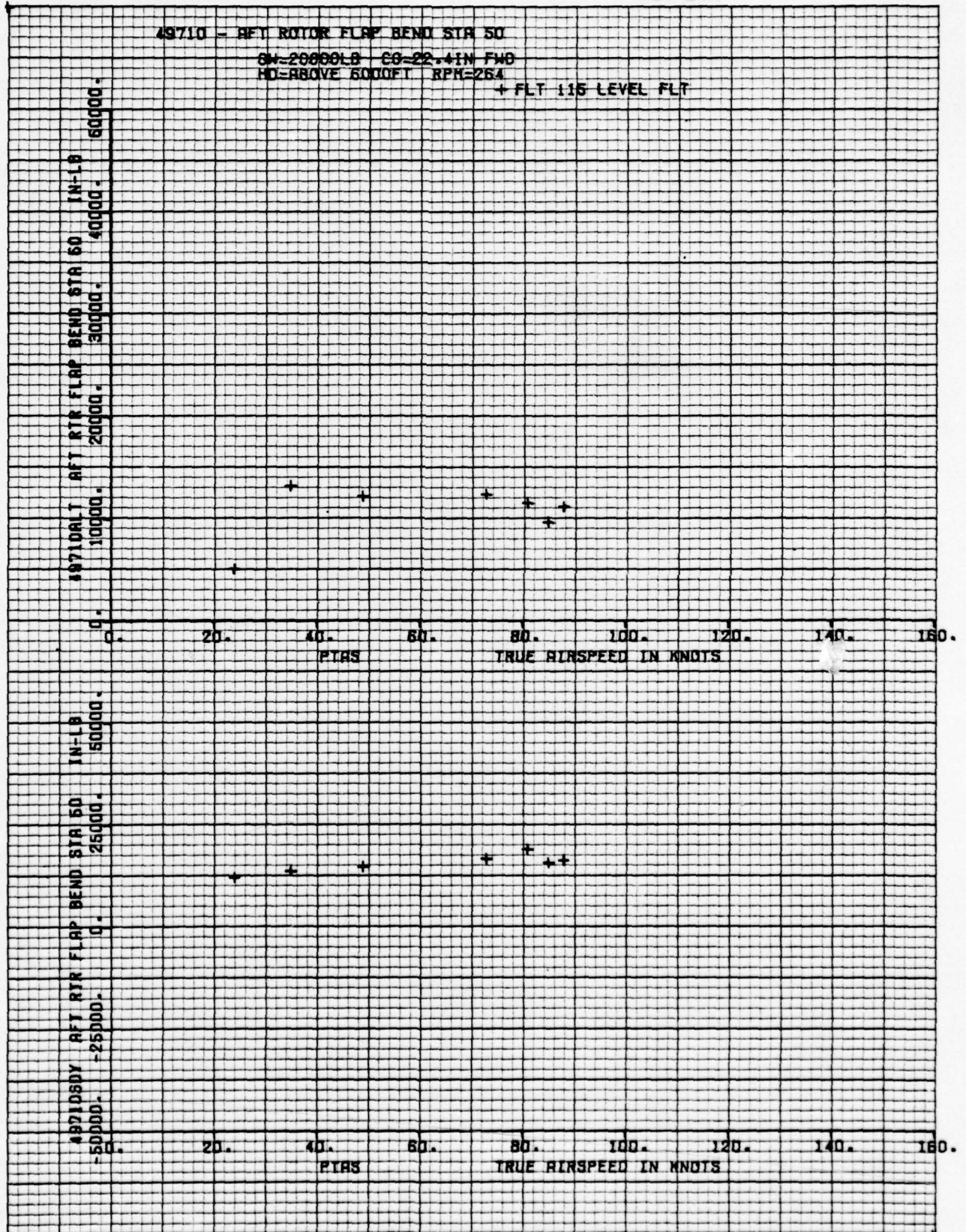
SHEET 154

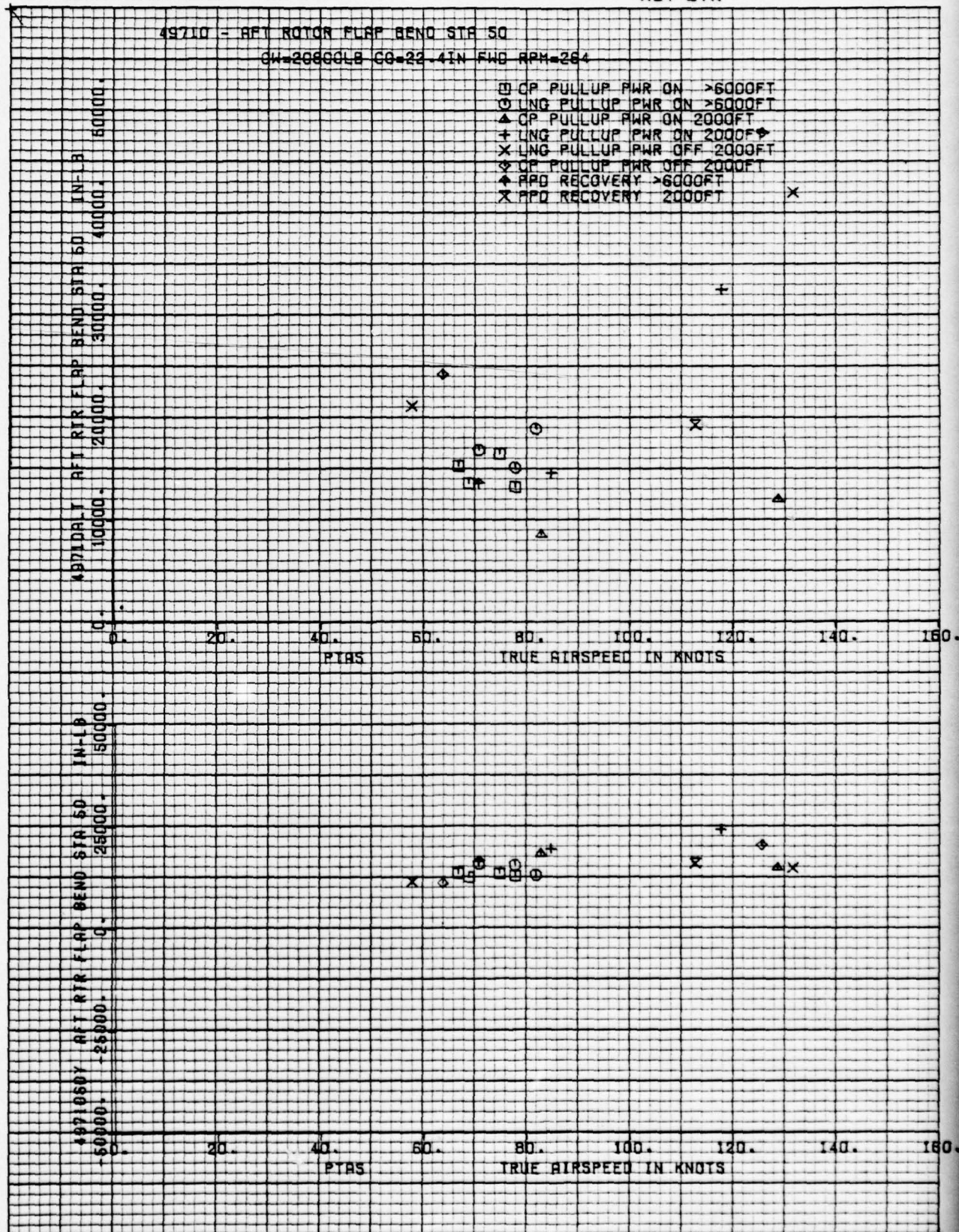
-1

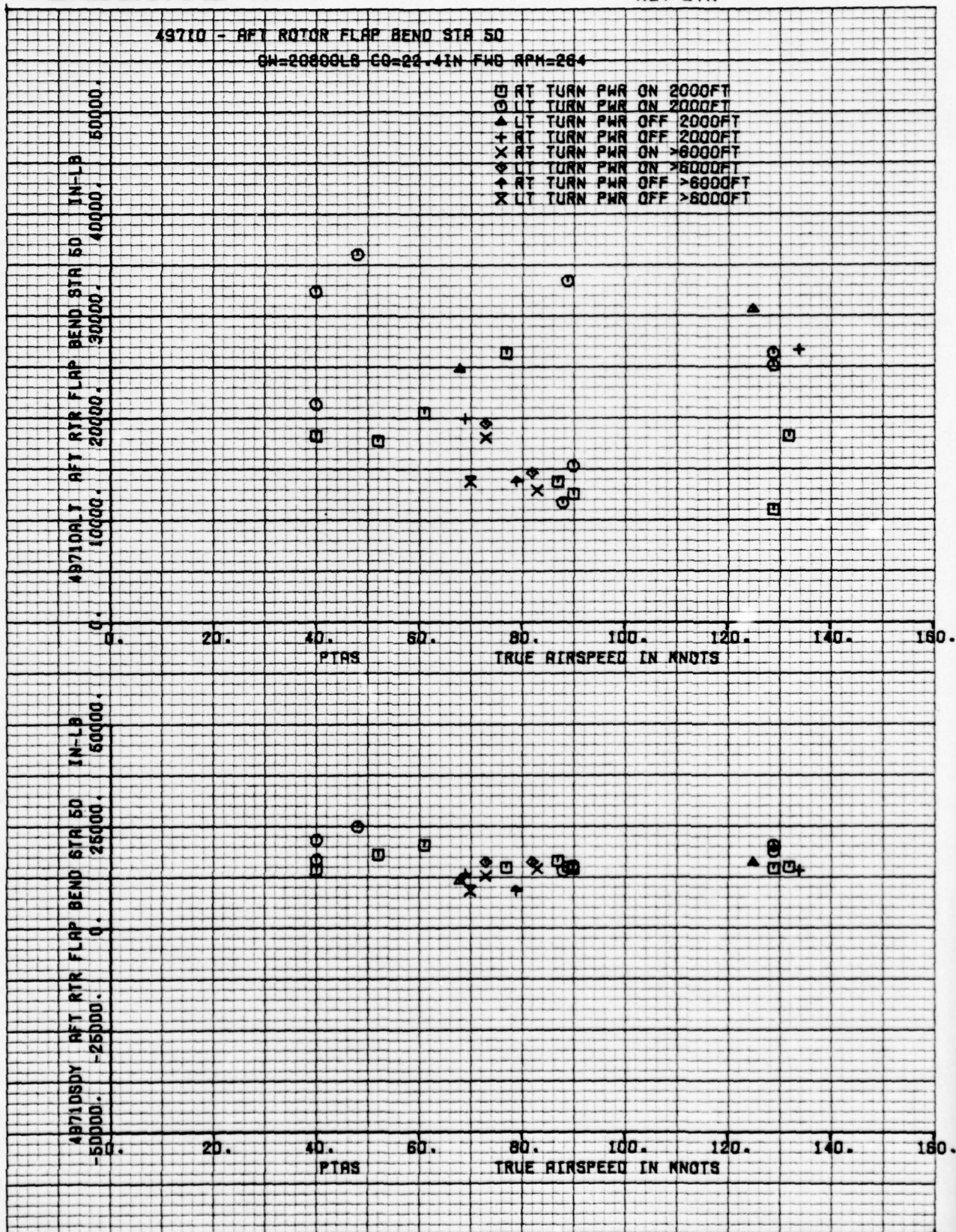
THE **BOEING** COMPANY

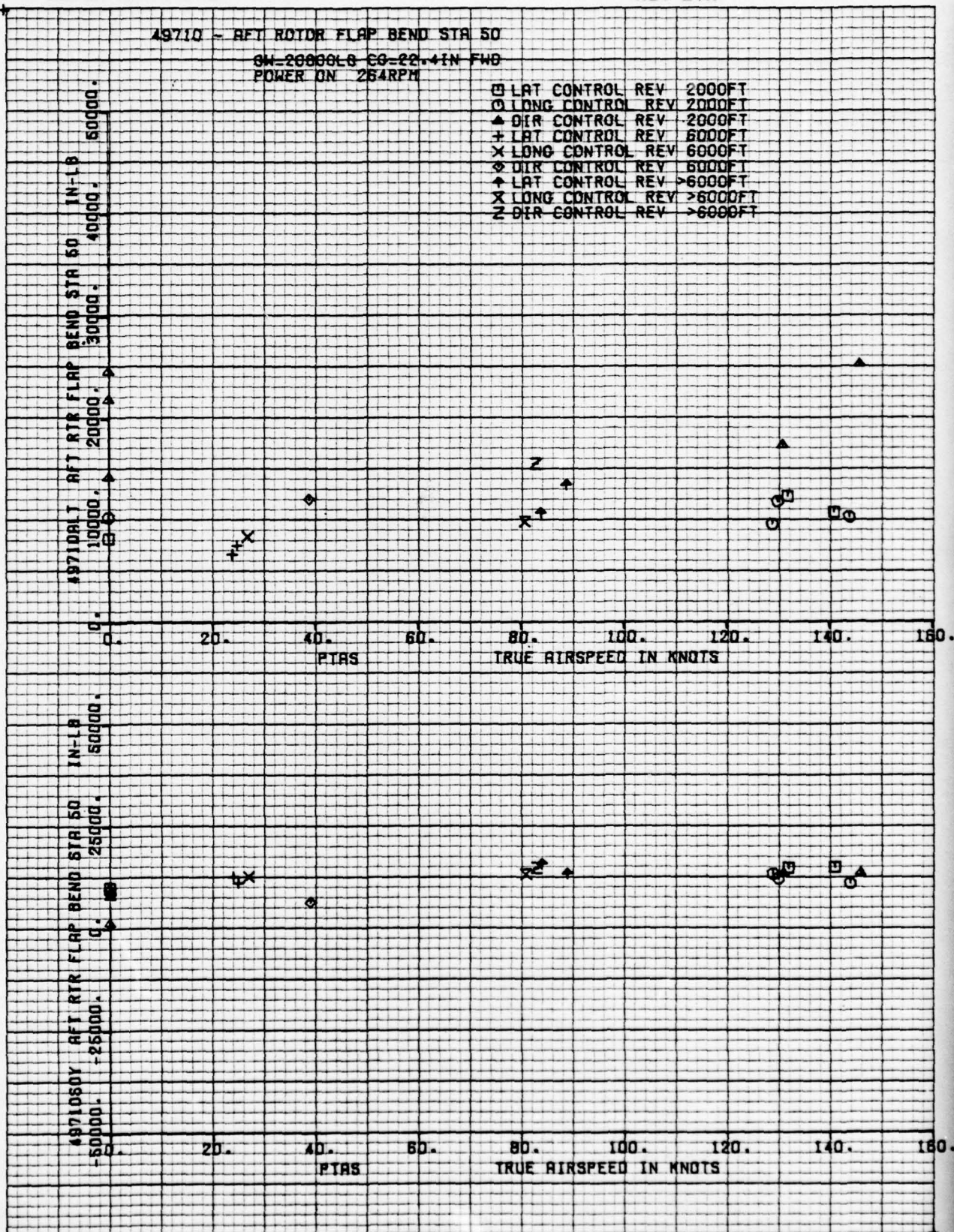
D210-11168-3

NUMBER ' VOLUME 4
REV LTR



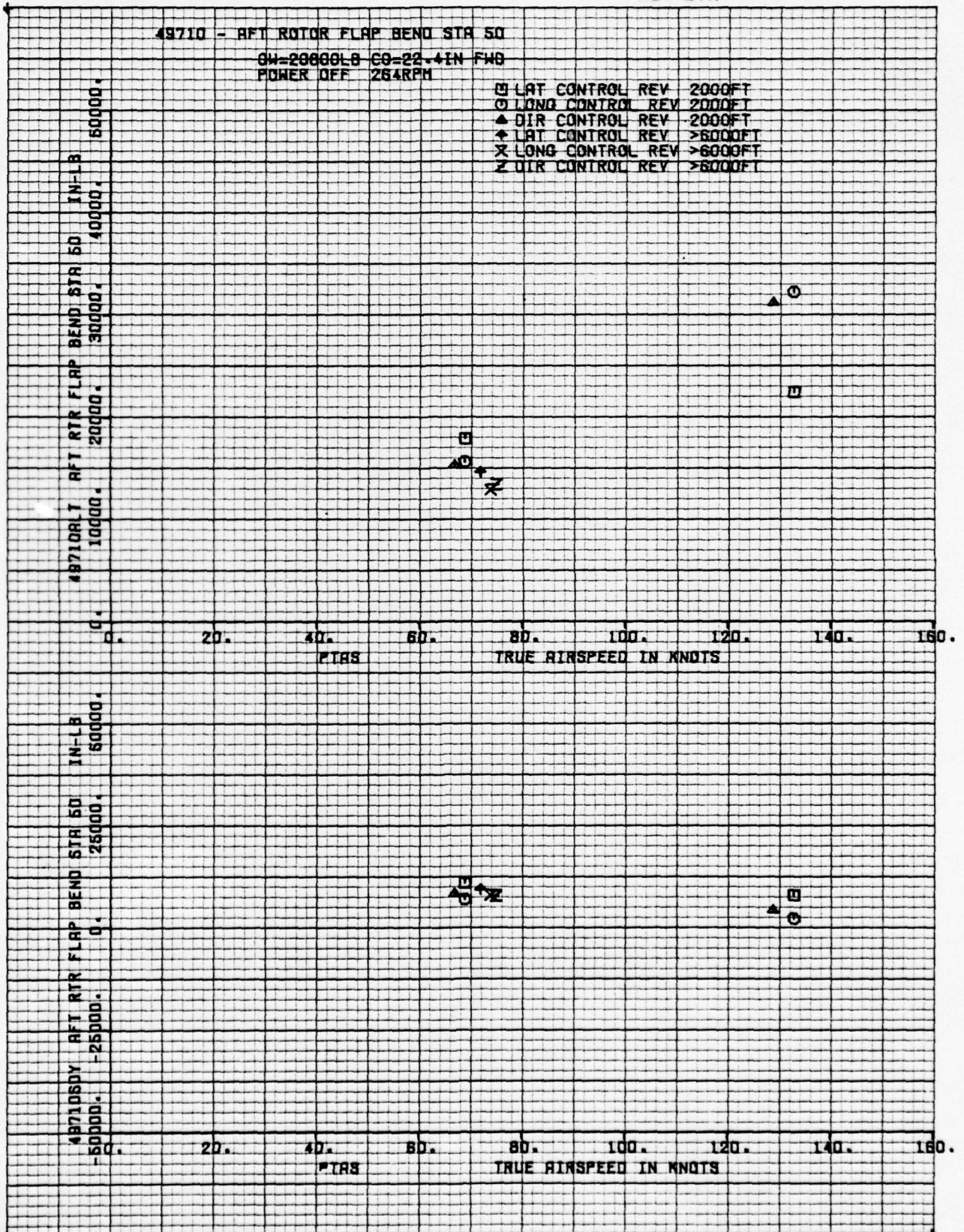


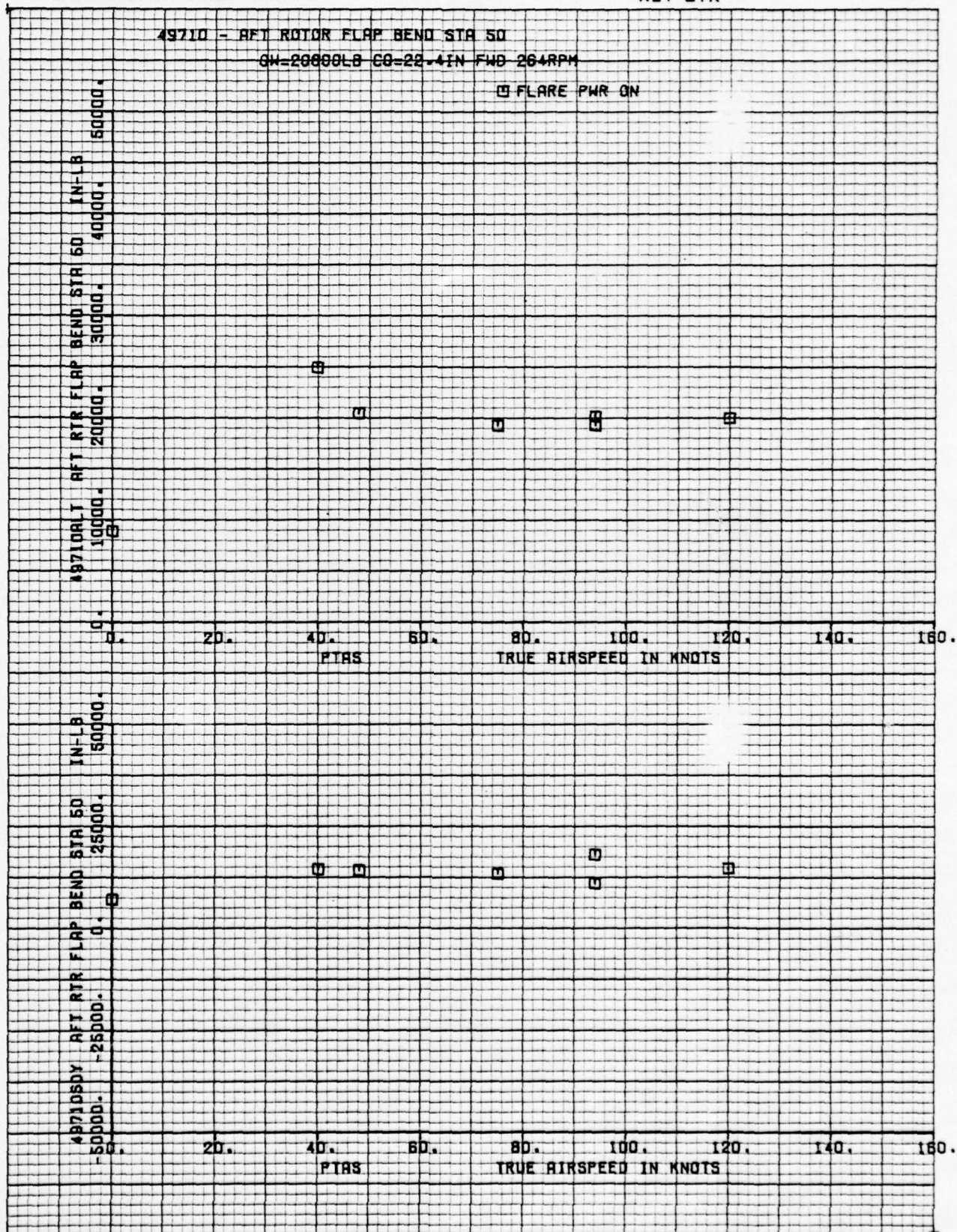




THE **BOEING** COMPANY

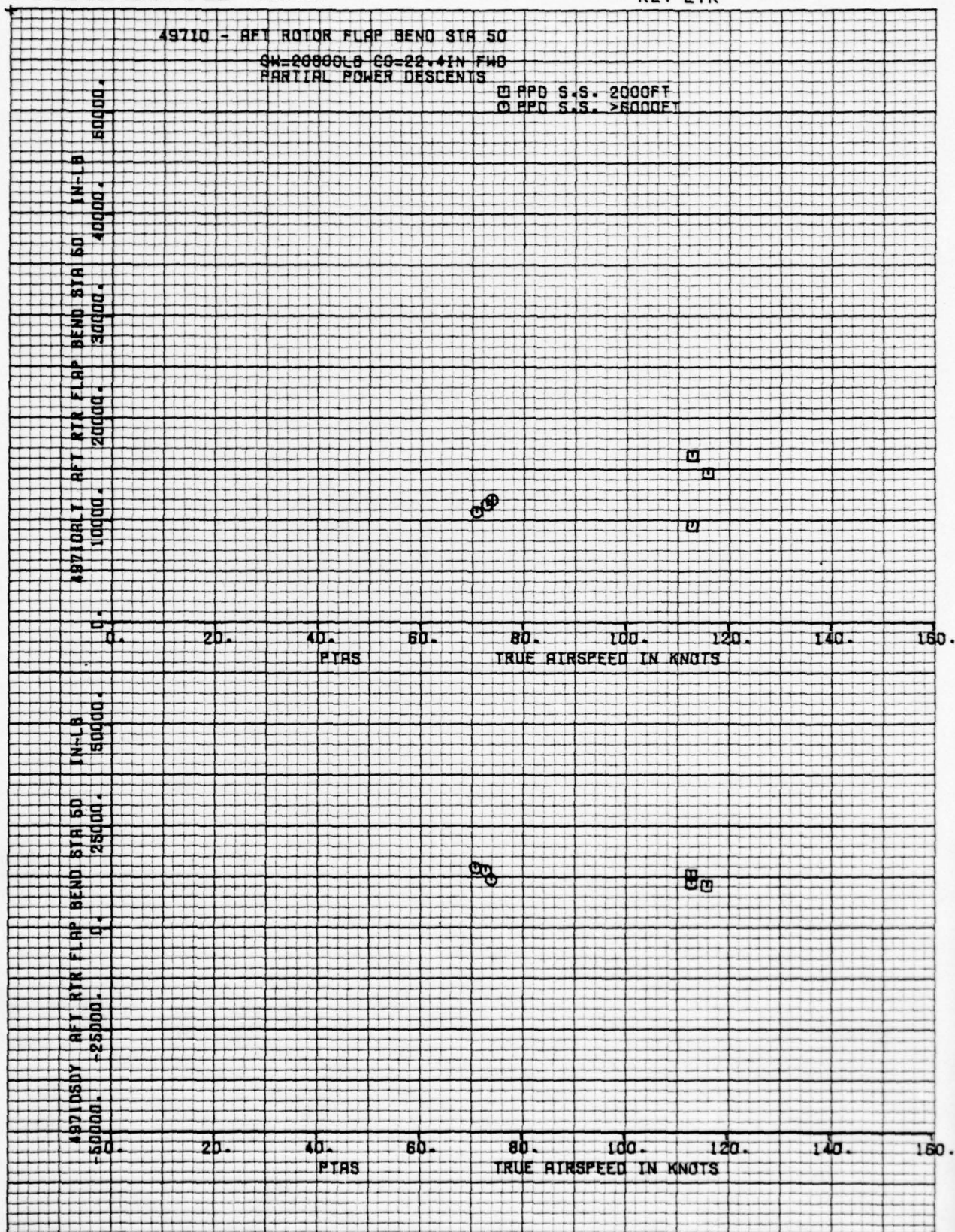
D210-11168-3
NUMBER **F** VOLUME **4**
REV LTR





THE **BOEING** COMPANY

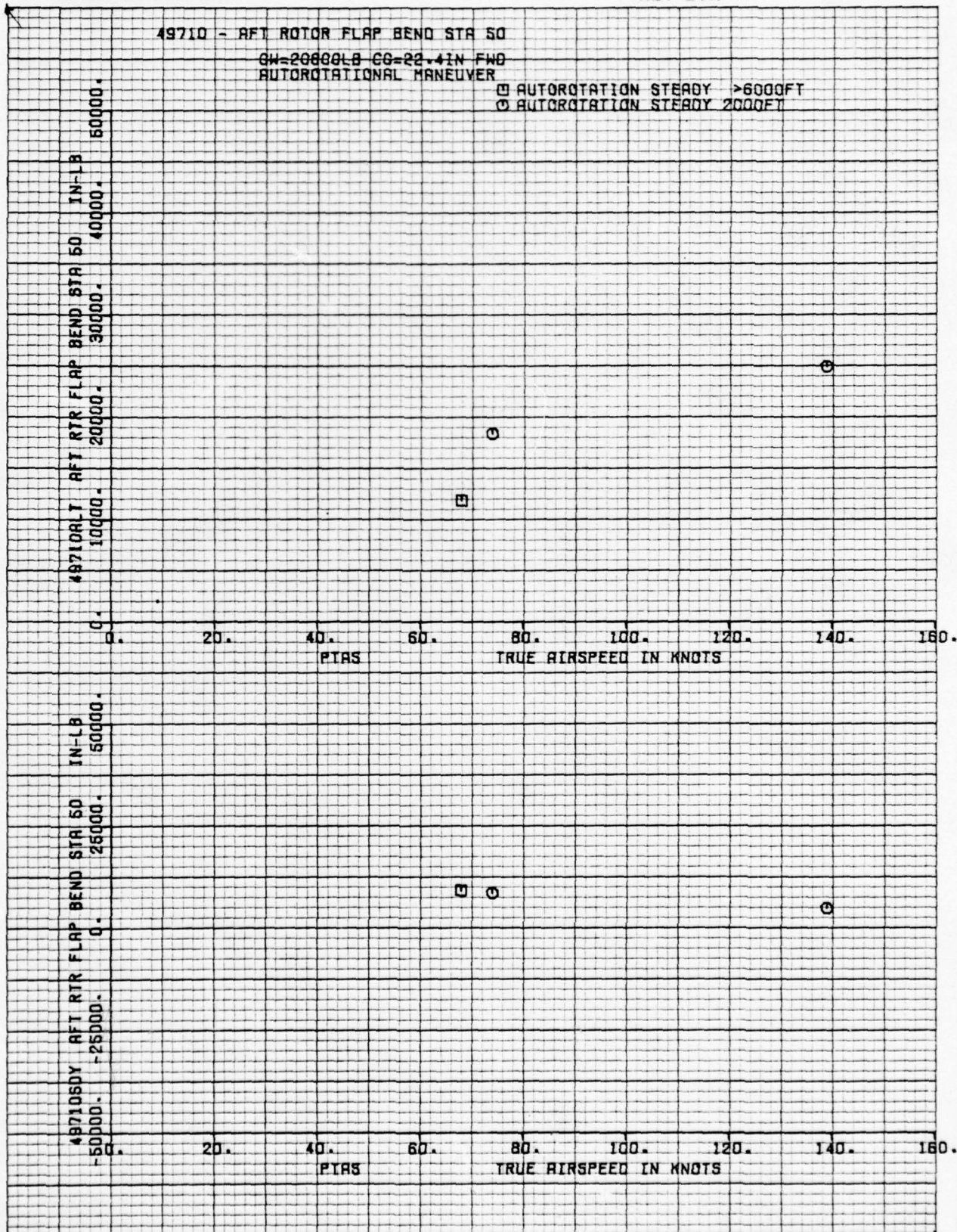
D210-11168-3
NUMBER / VOLUME 4
REV LTR

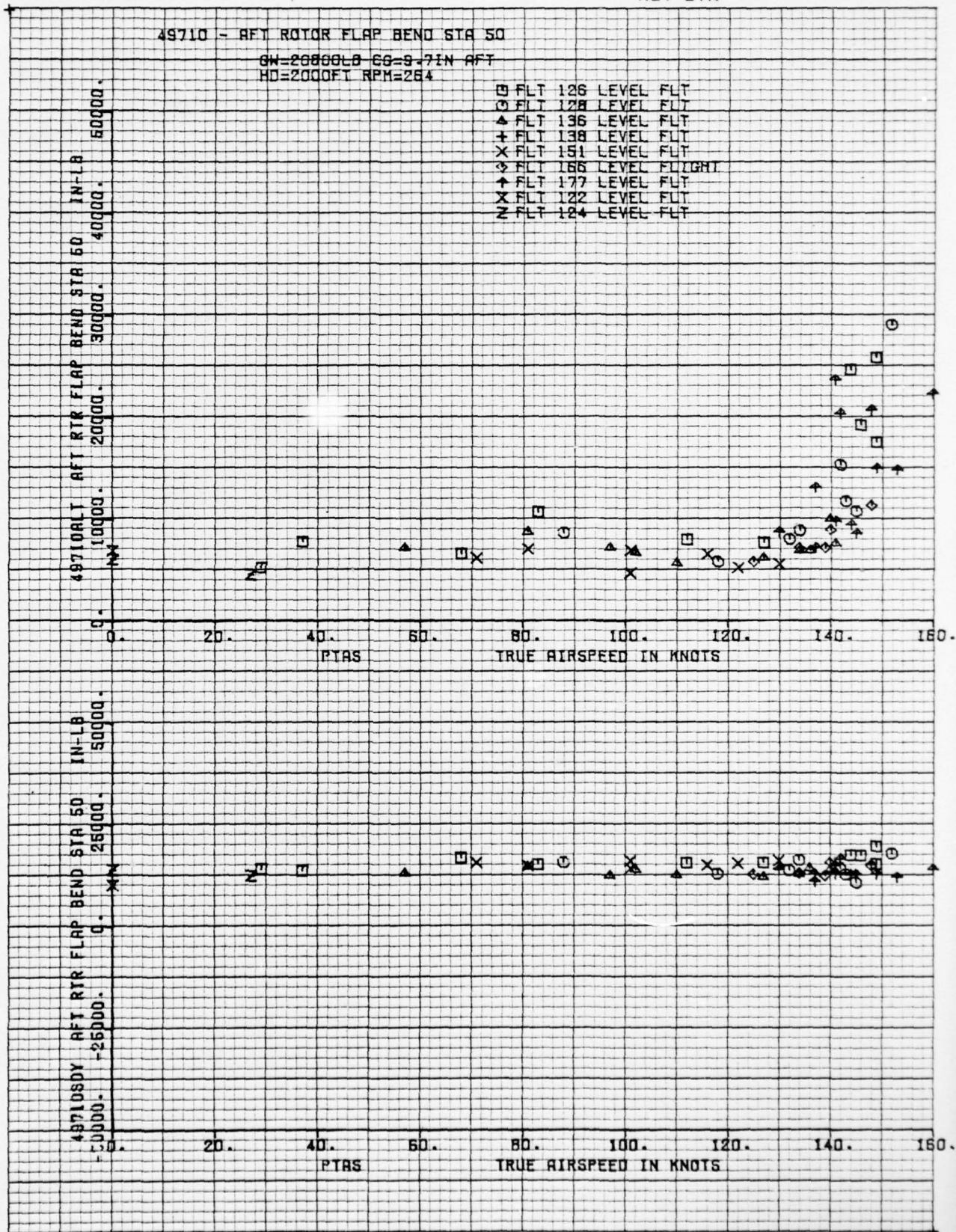


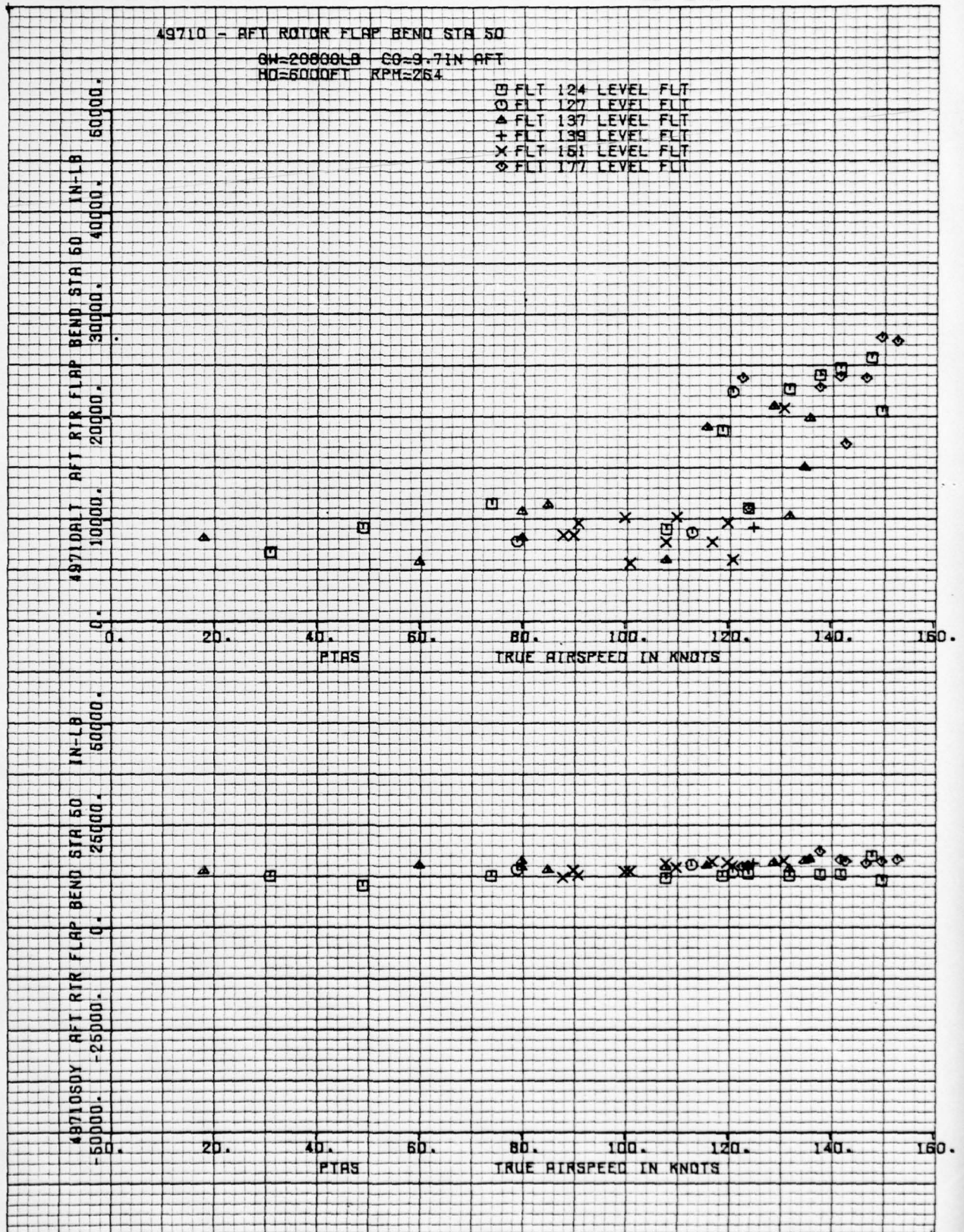
THE **BOEING** COMPANY

NUMBER
REV LTR

D210-11168-3
VOLUME 4

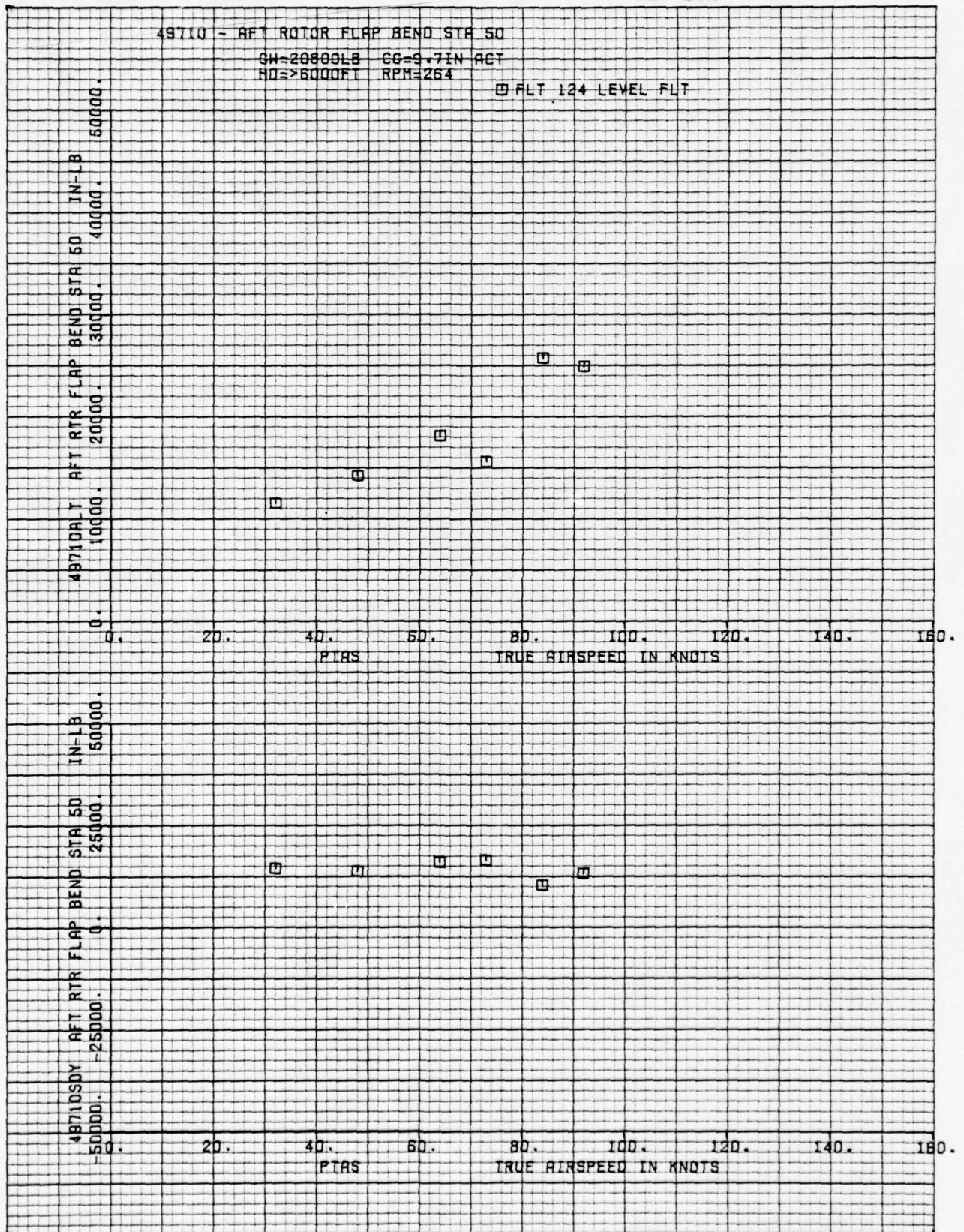


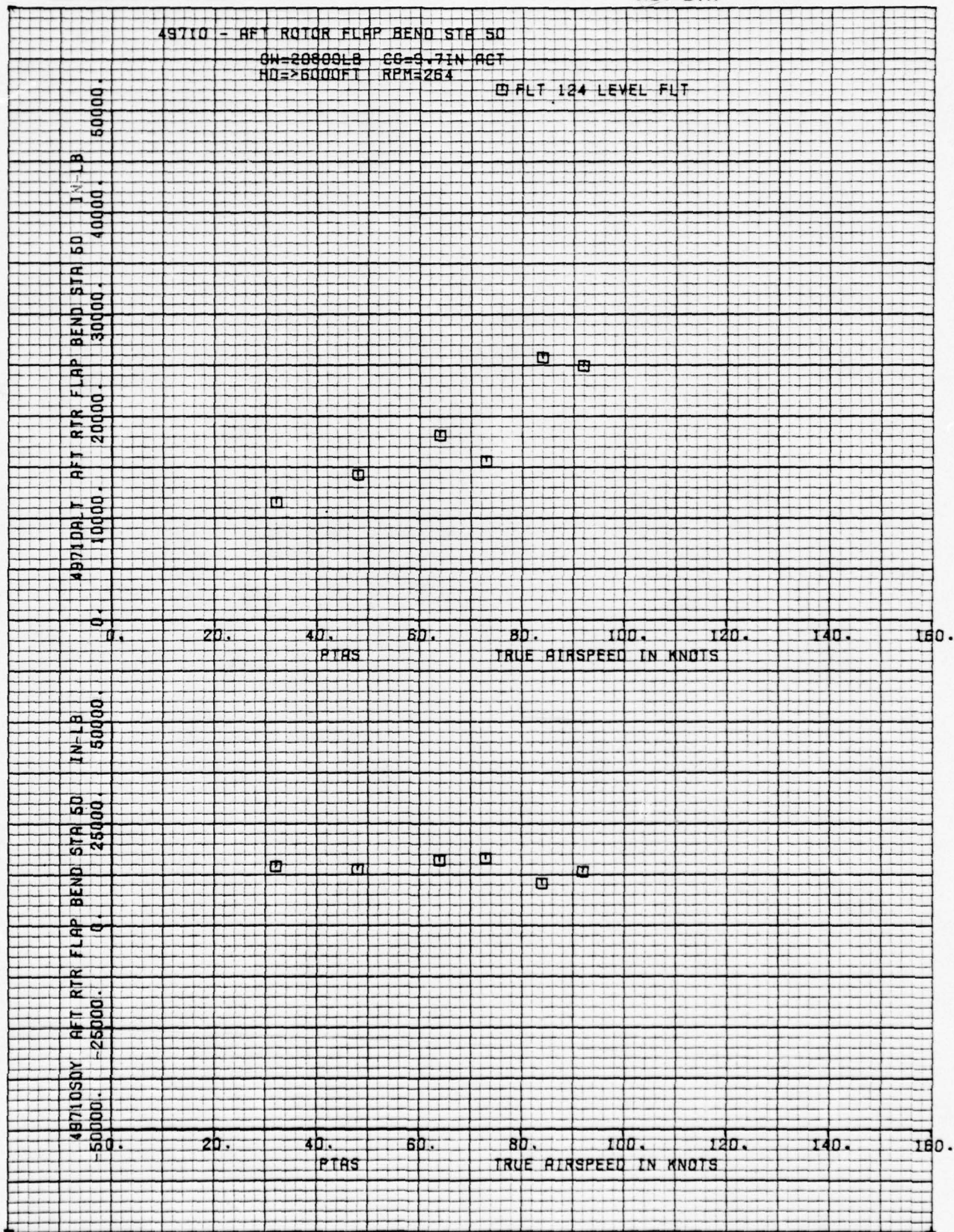


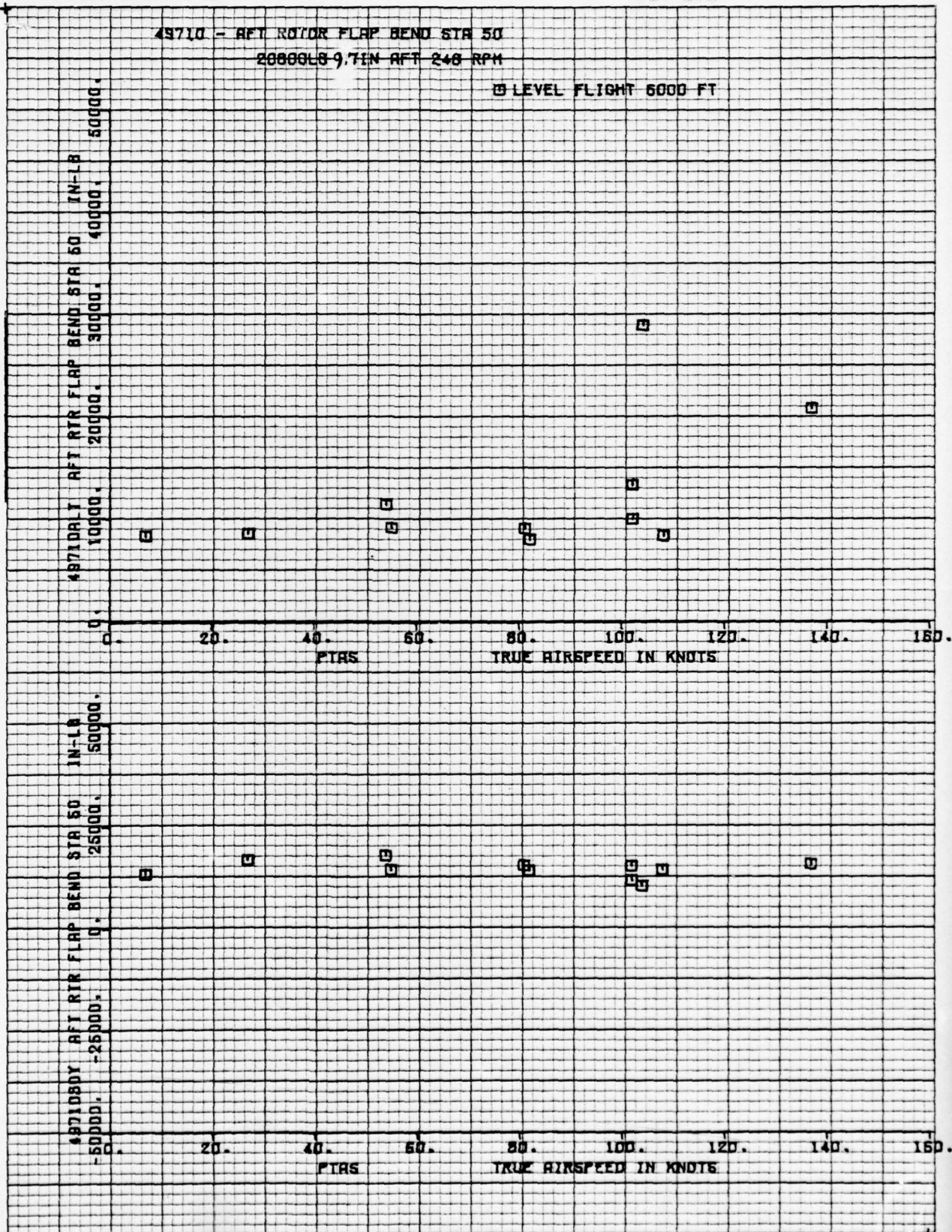


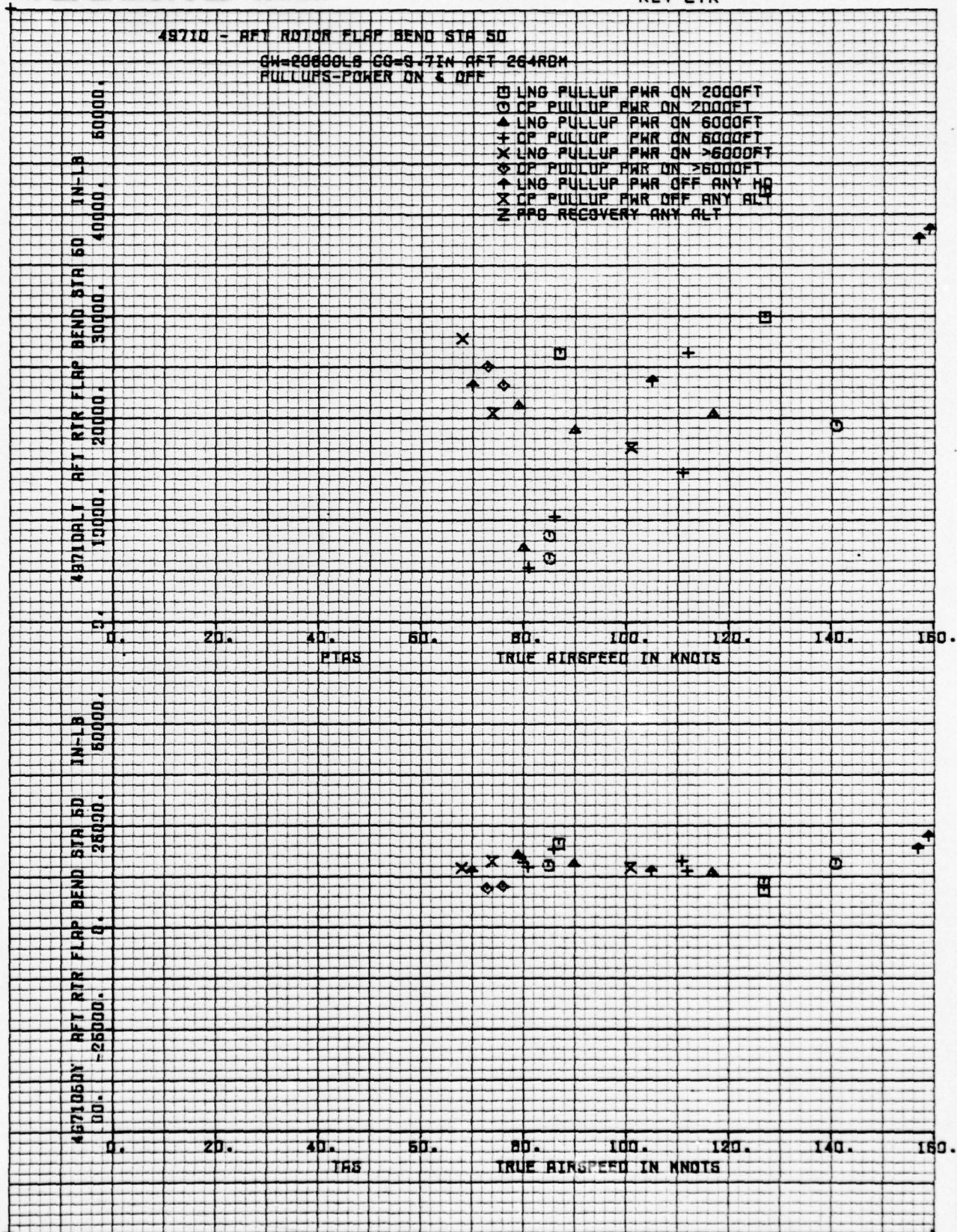
THE **BOEING** COMPANY

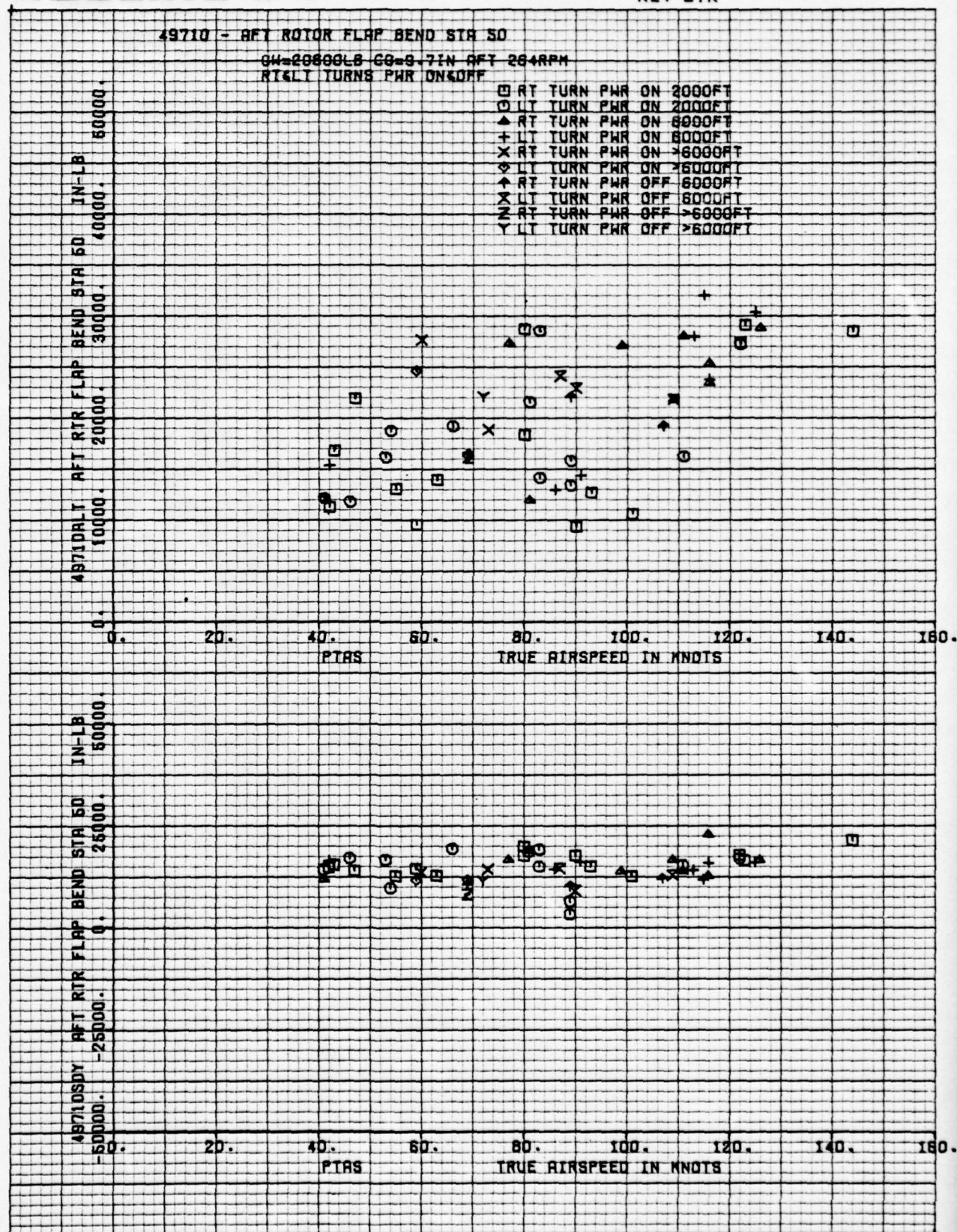
D210-11168-3
NUMBER **VOLUME 4**
REV LTR

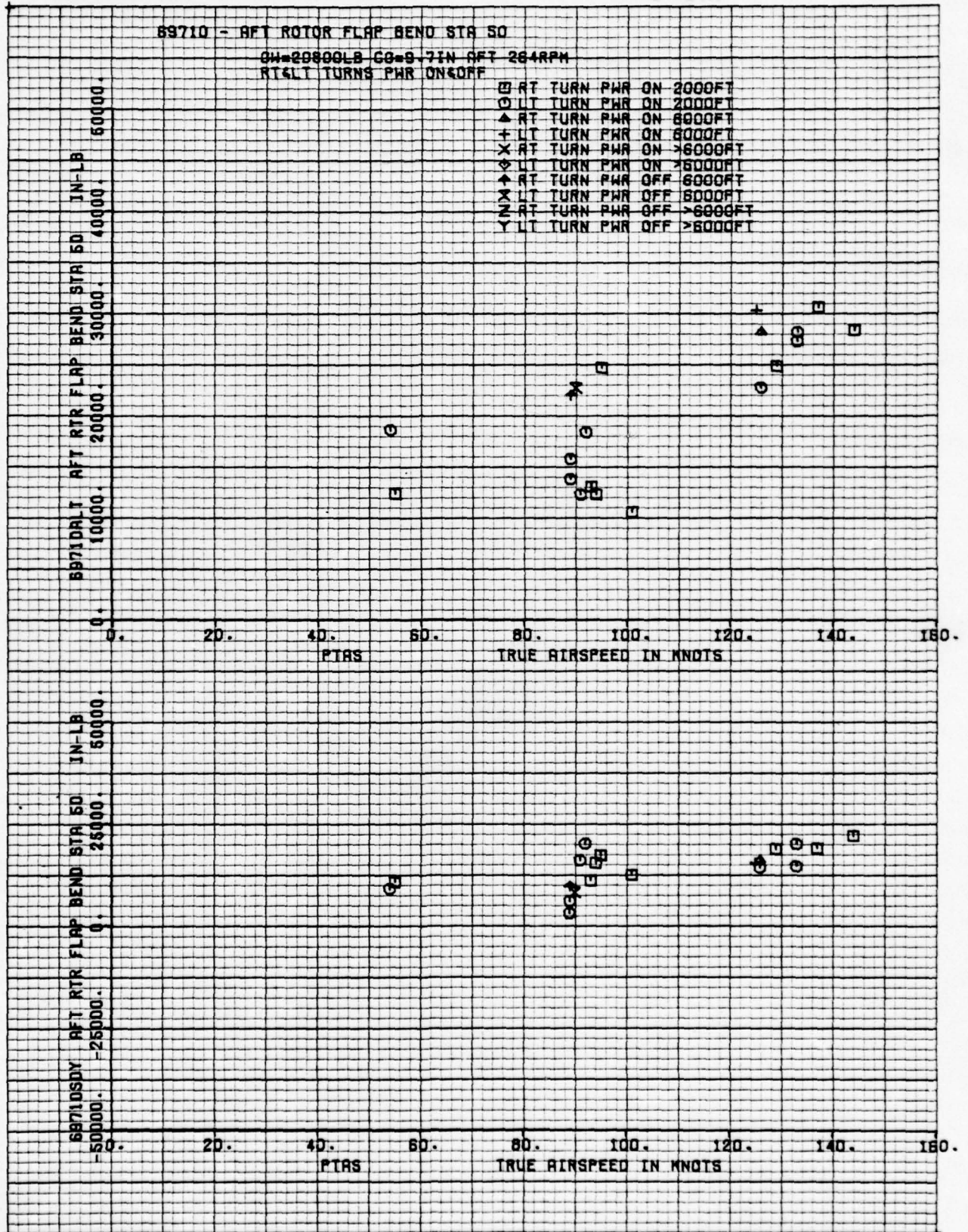










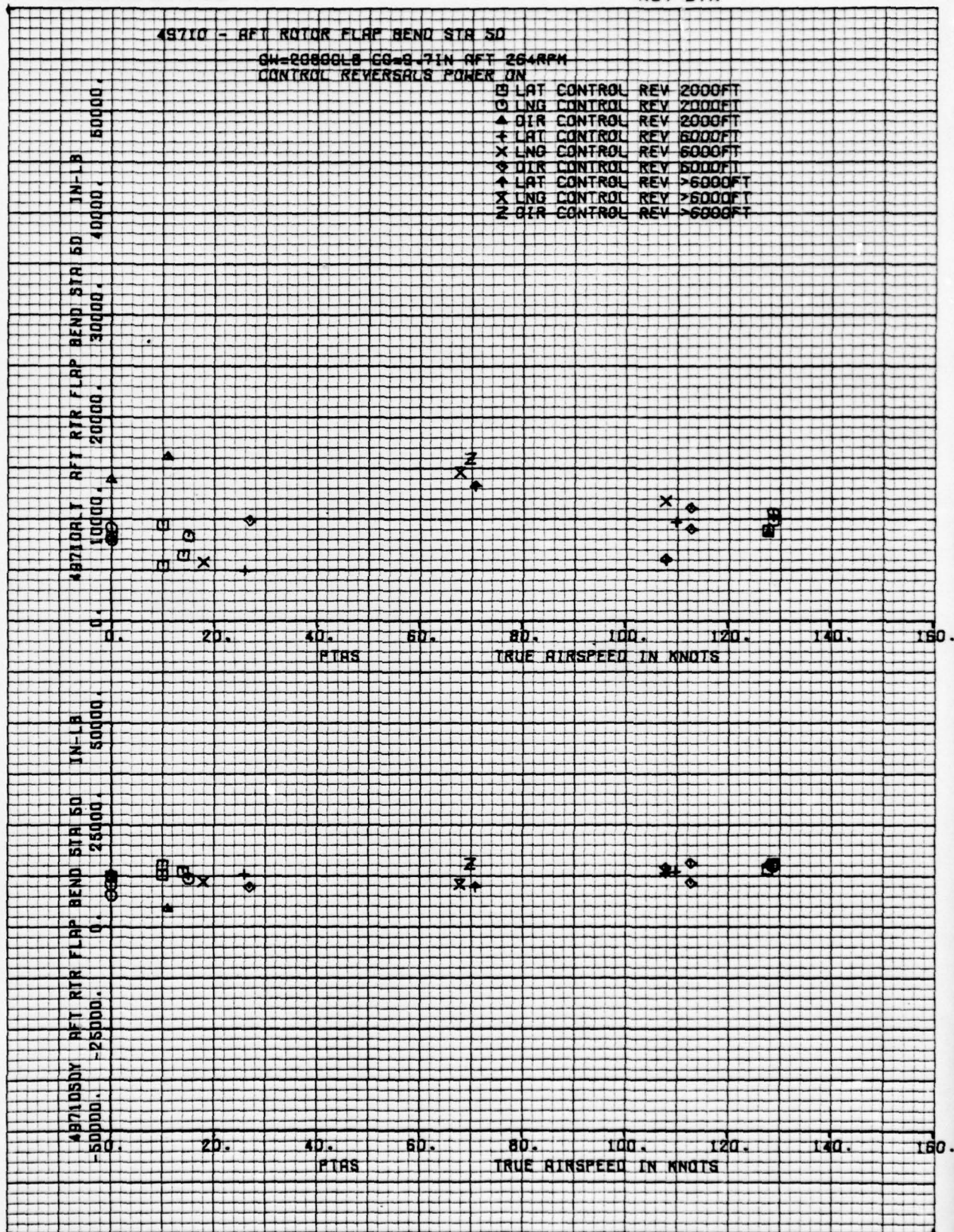


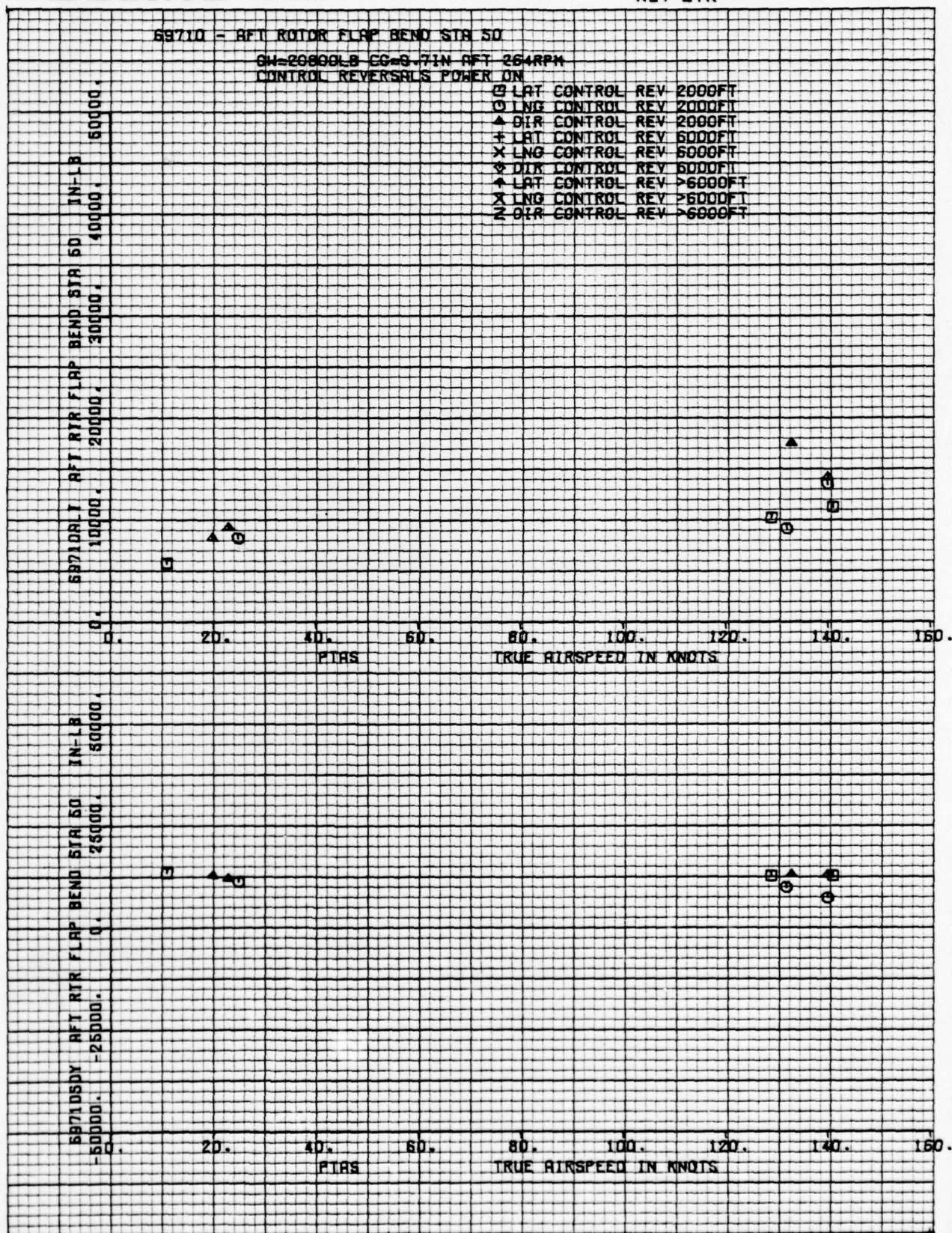
THE **BOEING** COMPANY

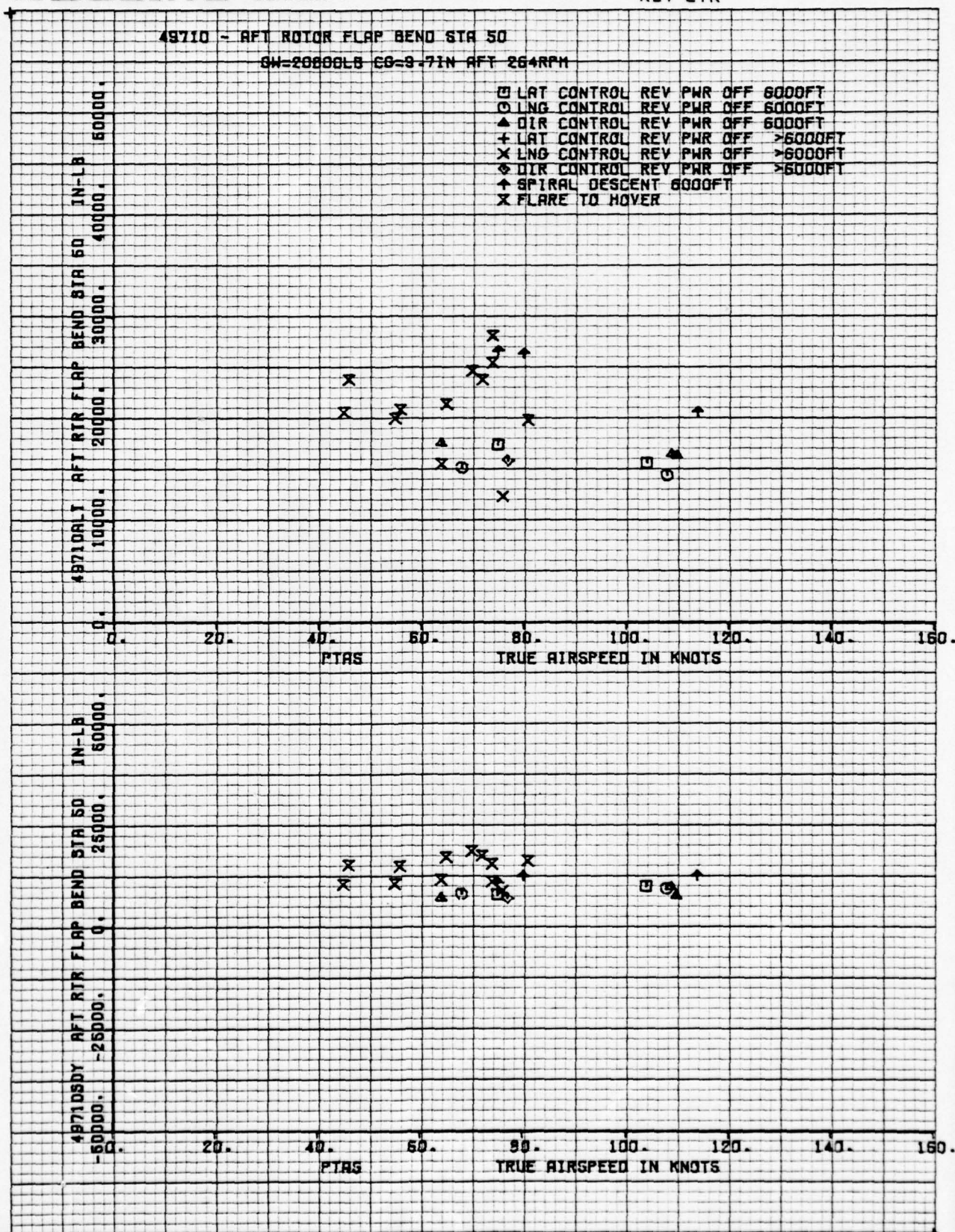
49710 - AFT ROTOR FLAP BEND STR 50

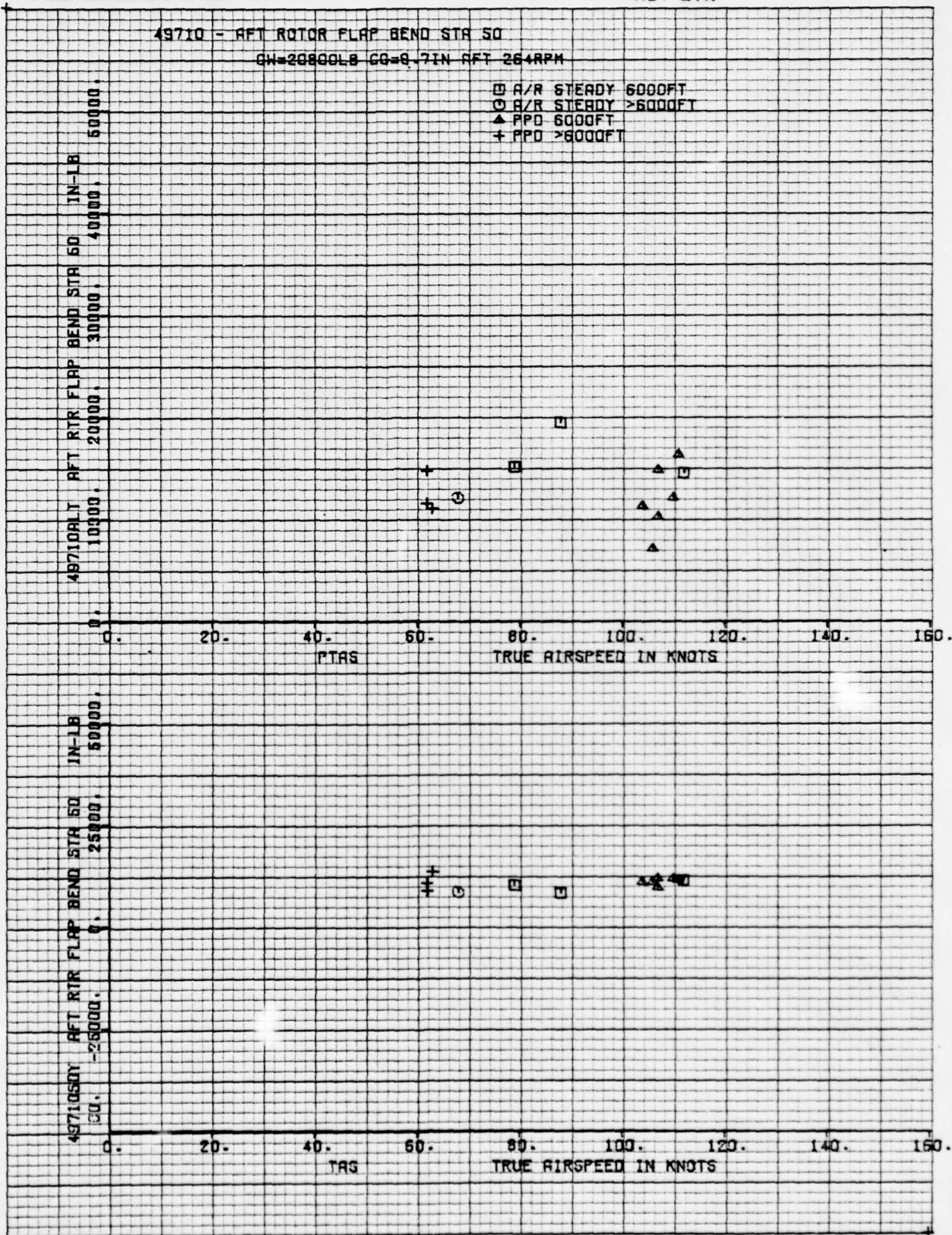
GW=20800LB CG=3.7IN AFT 264RPM
CONTROL REVERSALS POWER ON

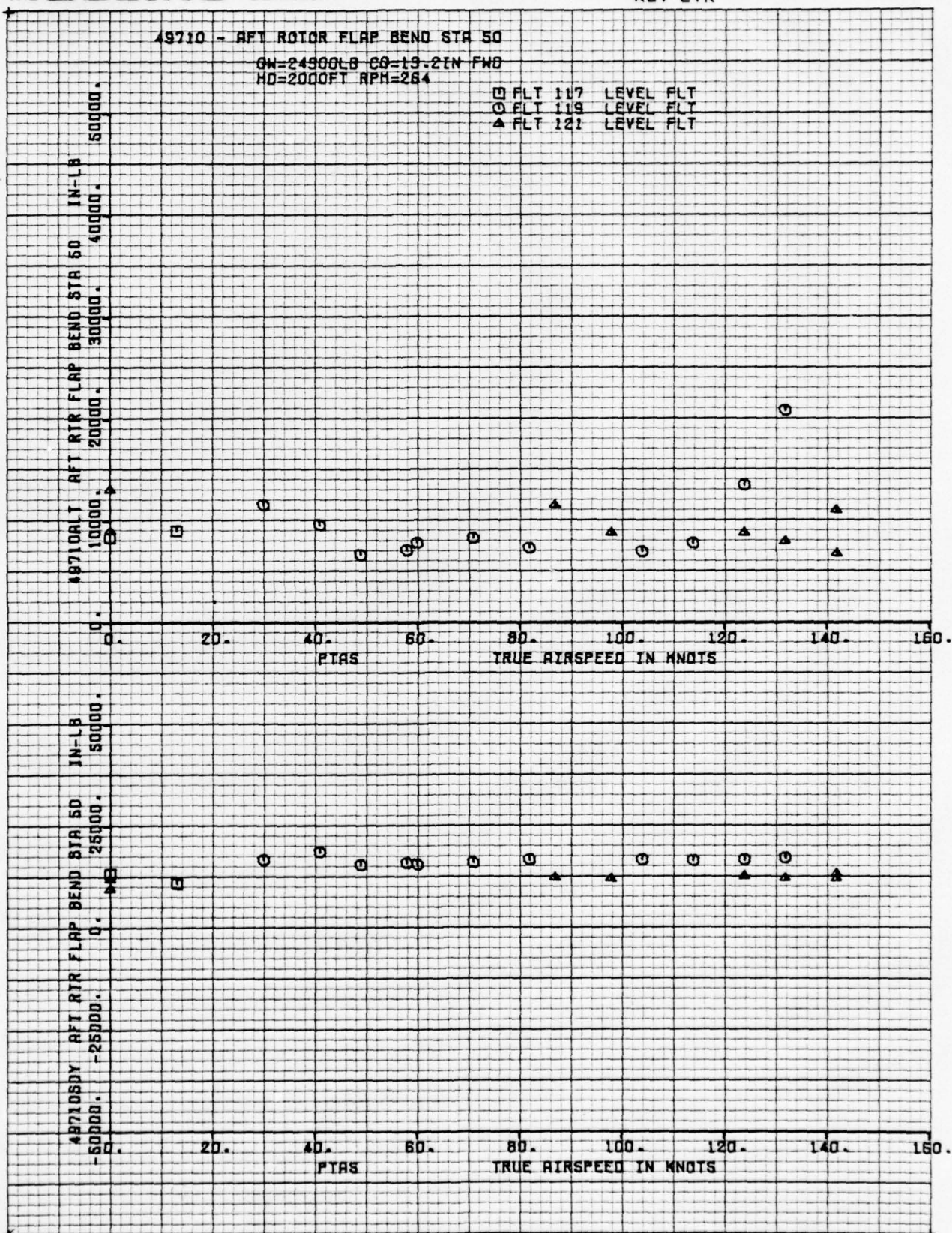
□	LAT CONTROL	REV	2000FT
○	LNG CONTROL	REV	2000FT
△	DIR CONTROL	REV	2000FT
+	LAT CONTROL	REV	6000FT
x	LNG CONTROL	REV	6000FT
◇	DIR CONTROL	REV	6000FT
▲	LAT CONTROL	REV	>6000FT
x	LNG CONTROL	REV	>6000FT
z	DIR CONTROL	REV	>6000FT





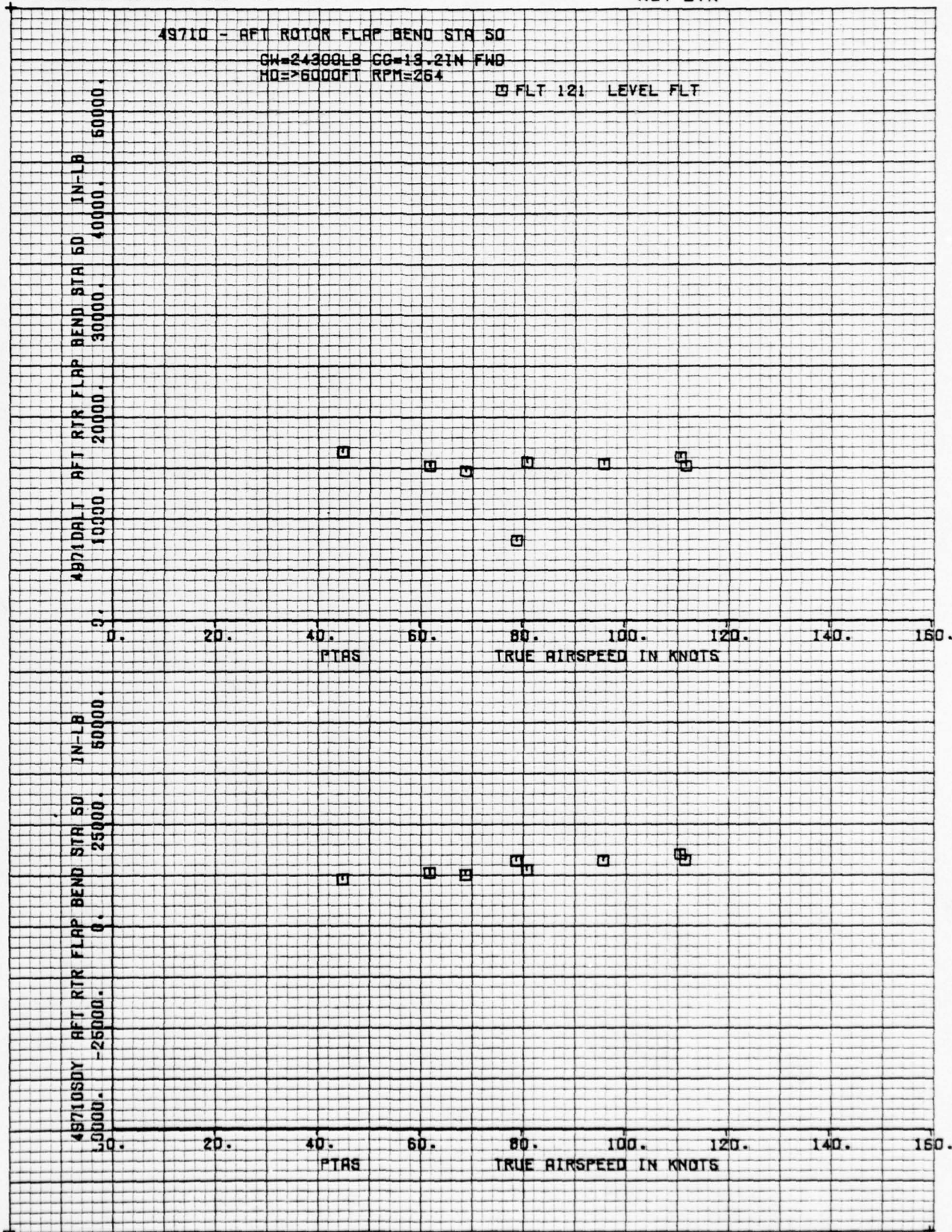


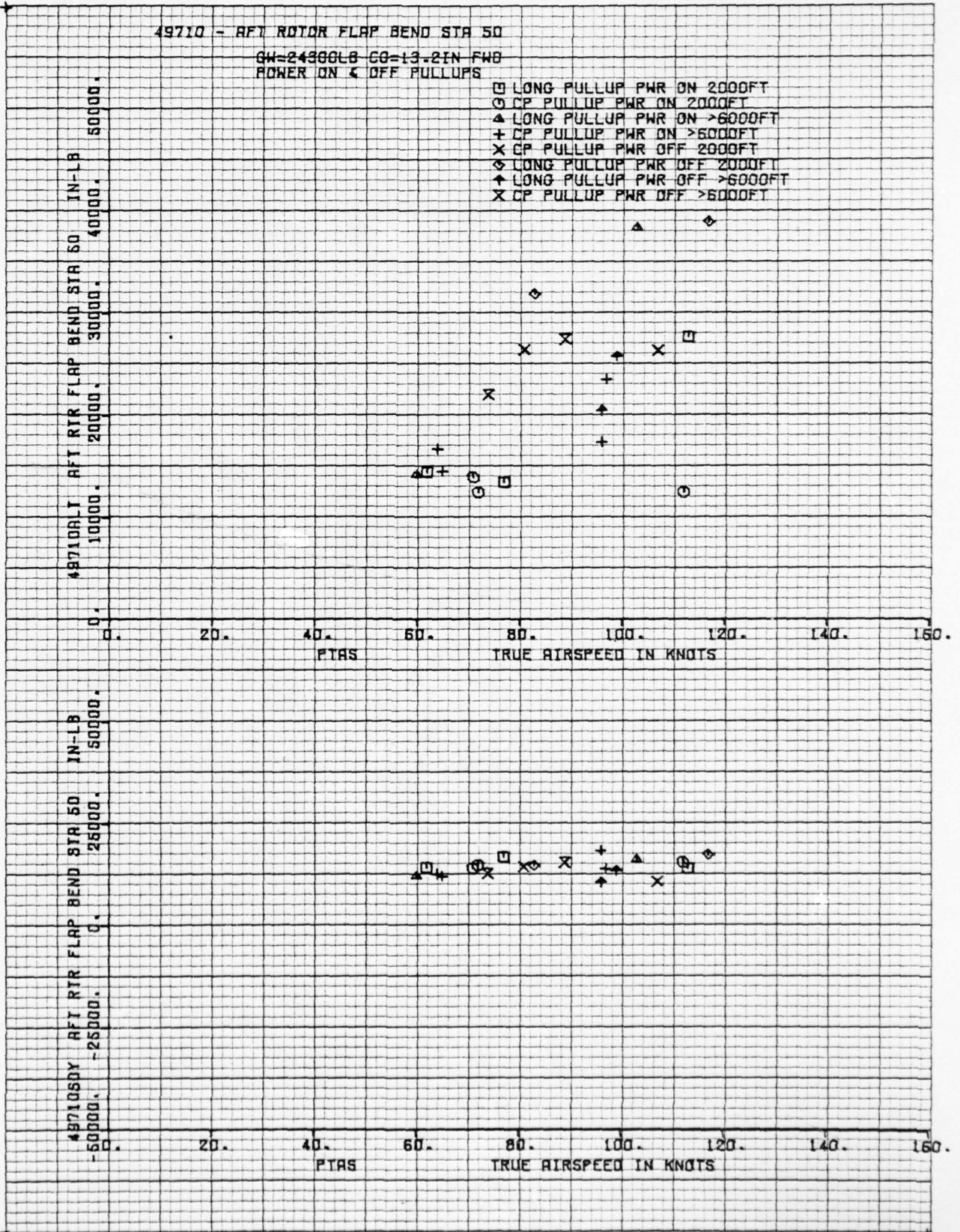


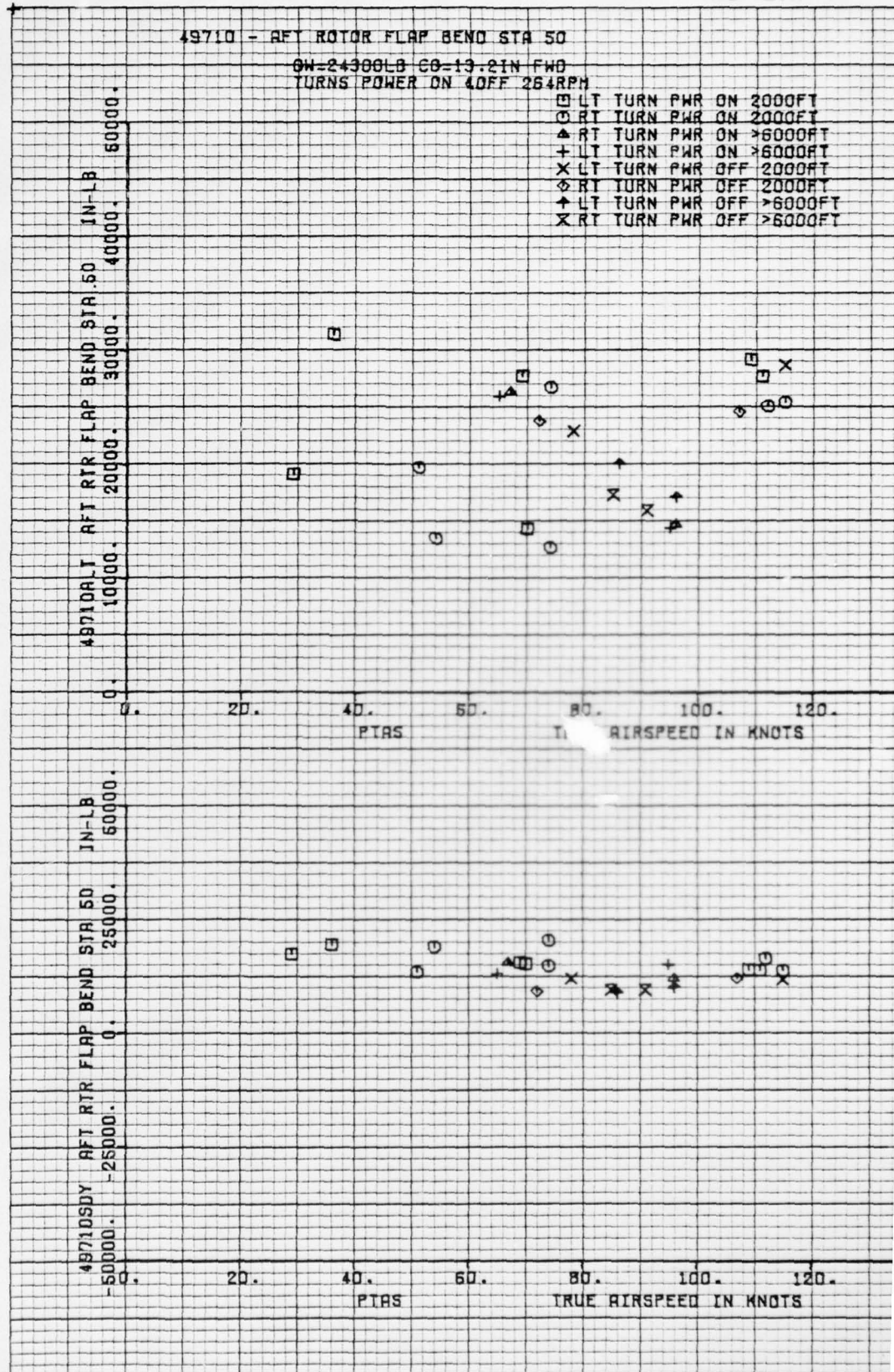


THE **BOEING** COMPANY

D210-11168-3
NUMBER **VOLUME 4**
REV LTR





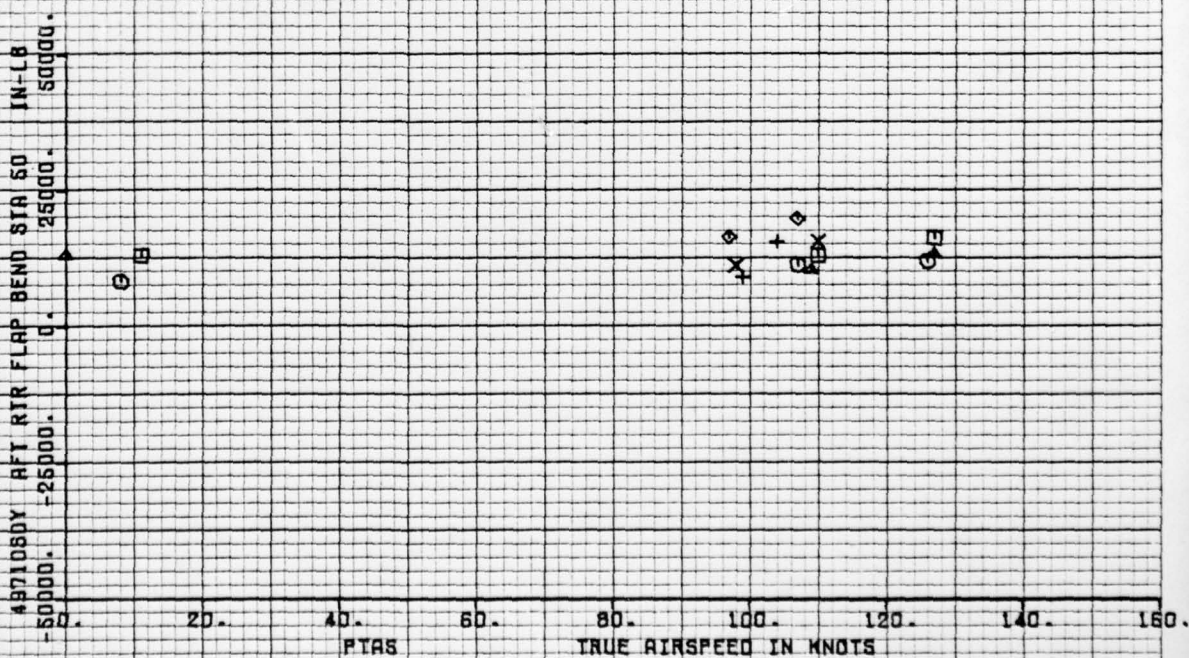
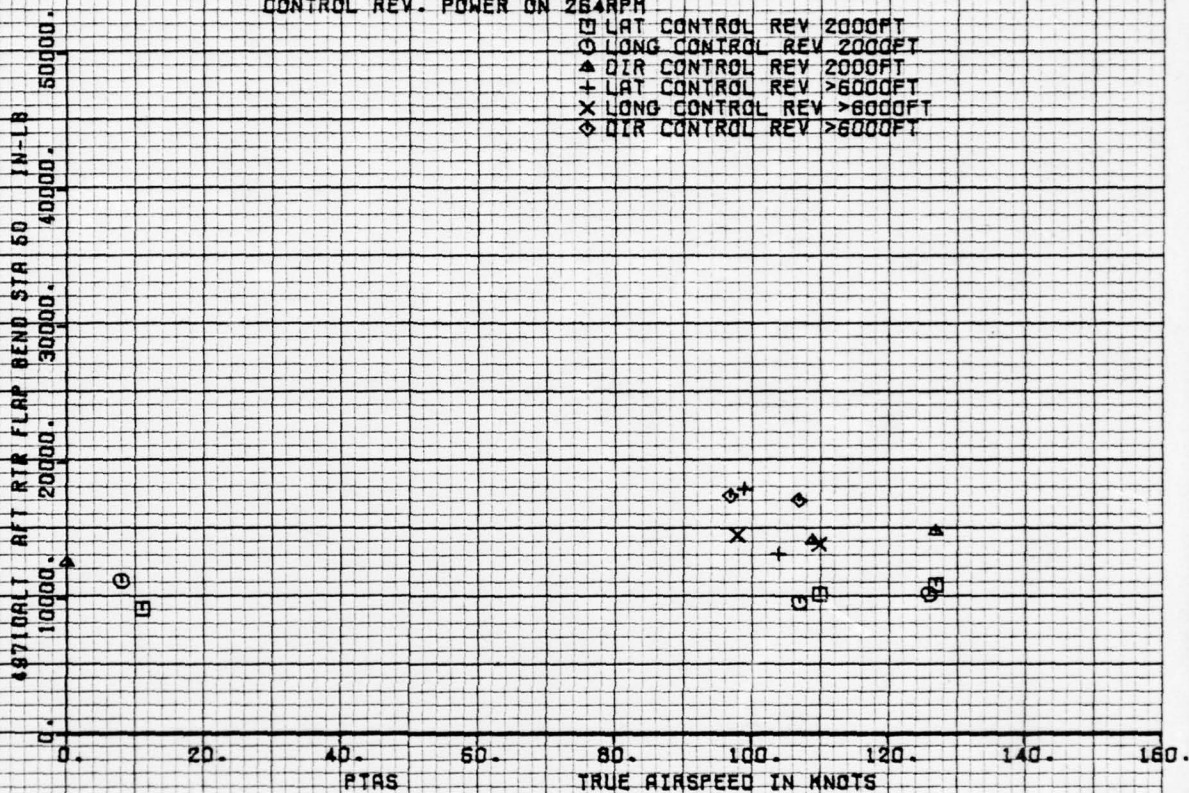


THE **BOEING** COMPANY

49710 - AFT ROTOR FLAP BEND STA 50

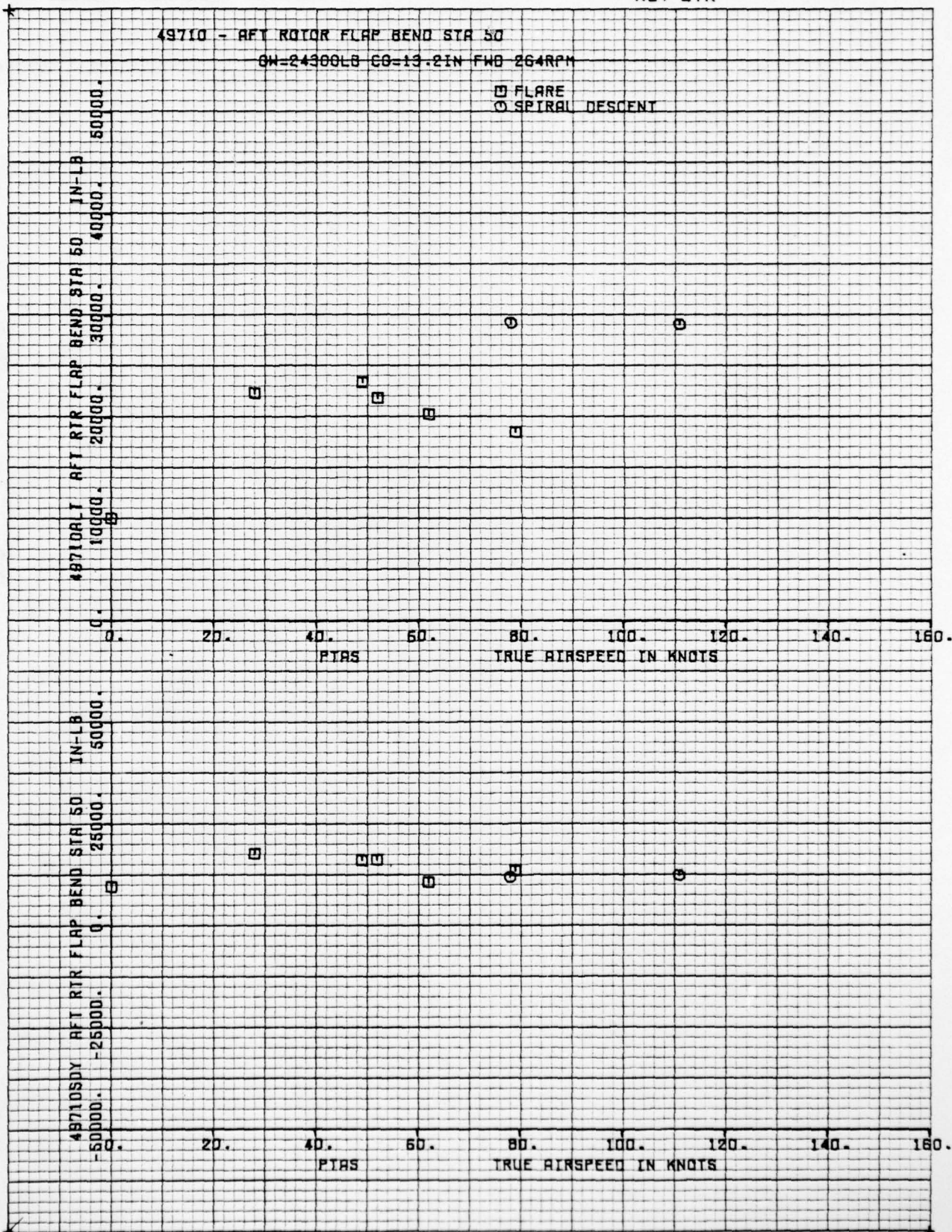
GM-24300LB CO-19-2IN FWD
CONTROL REV. POWER ON 264RPM

□ LAT CONTROL REV 2000FT
 ○ LONG CONTROL REV 2000FT
 ▲ DIR CONTROL REV 2000FT
 + LAT CONTROL REV >6000FT
 × LONG CONTROL REV >6000FT
 ◇ DIR CONTROL REV >6000FT

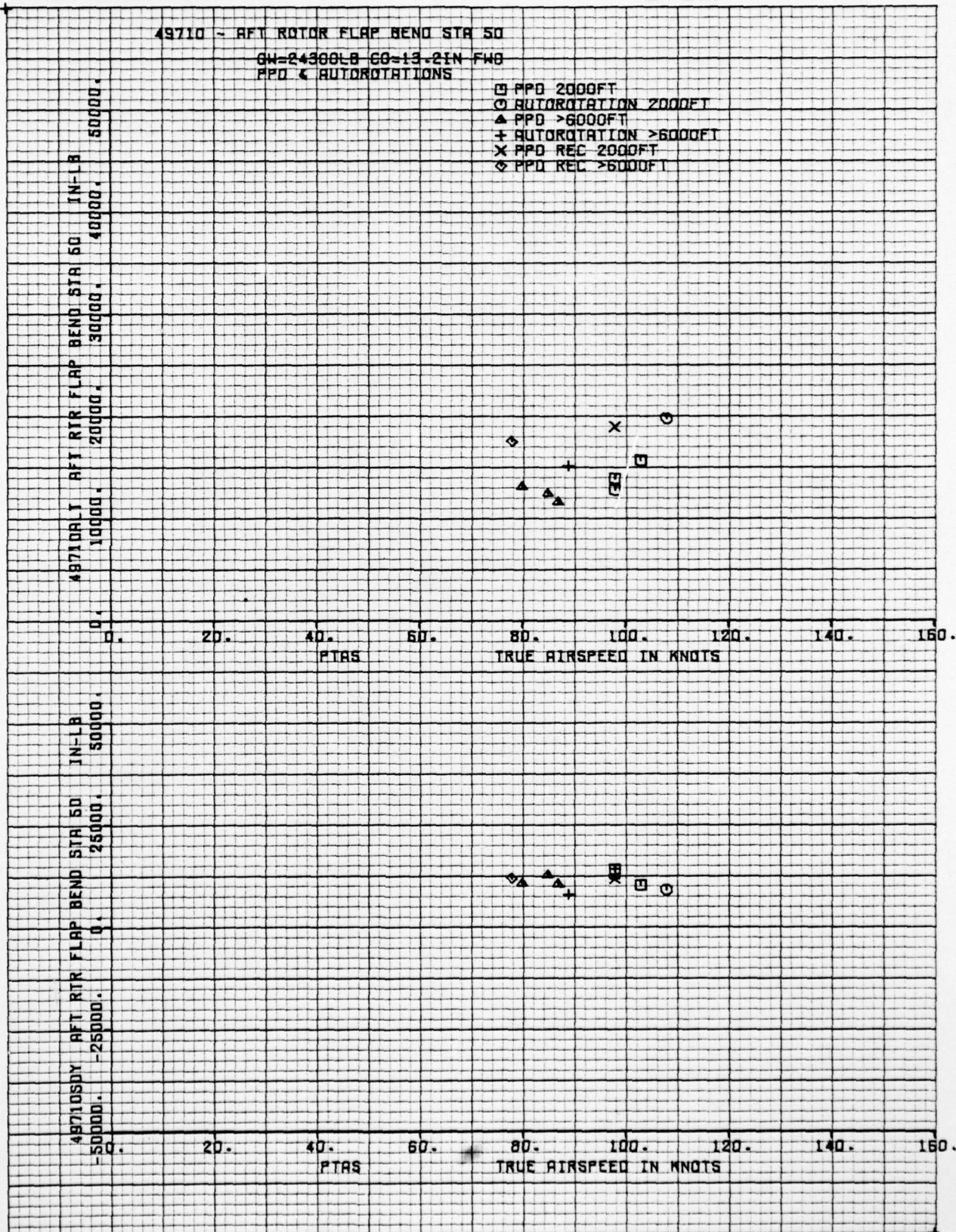


THE **BOEING** COMPANY

NUMBER : D210-11168-3
REV LTR VOLUME 4

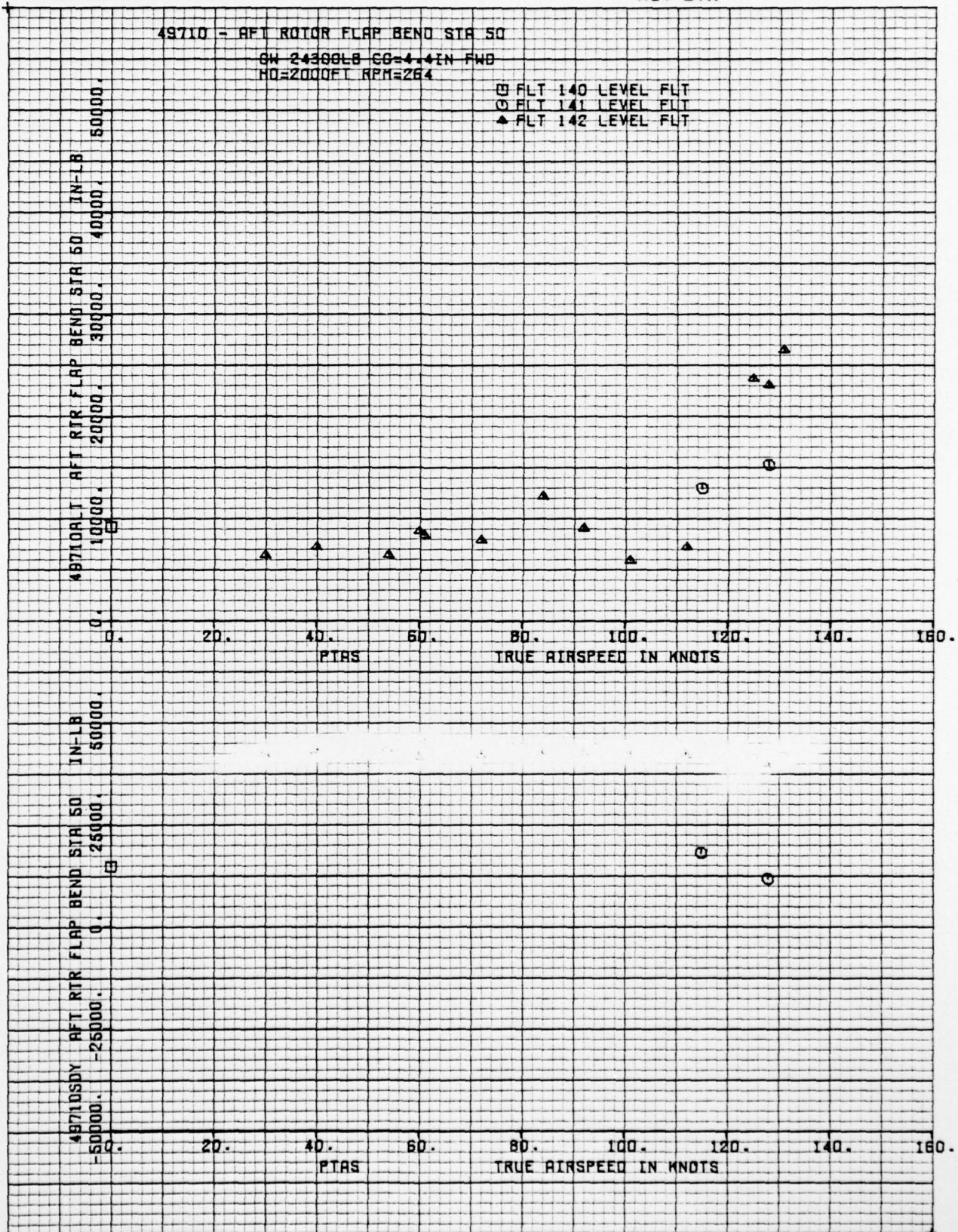


FORM 52300 (10/71)

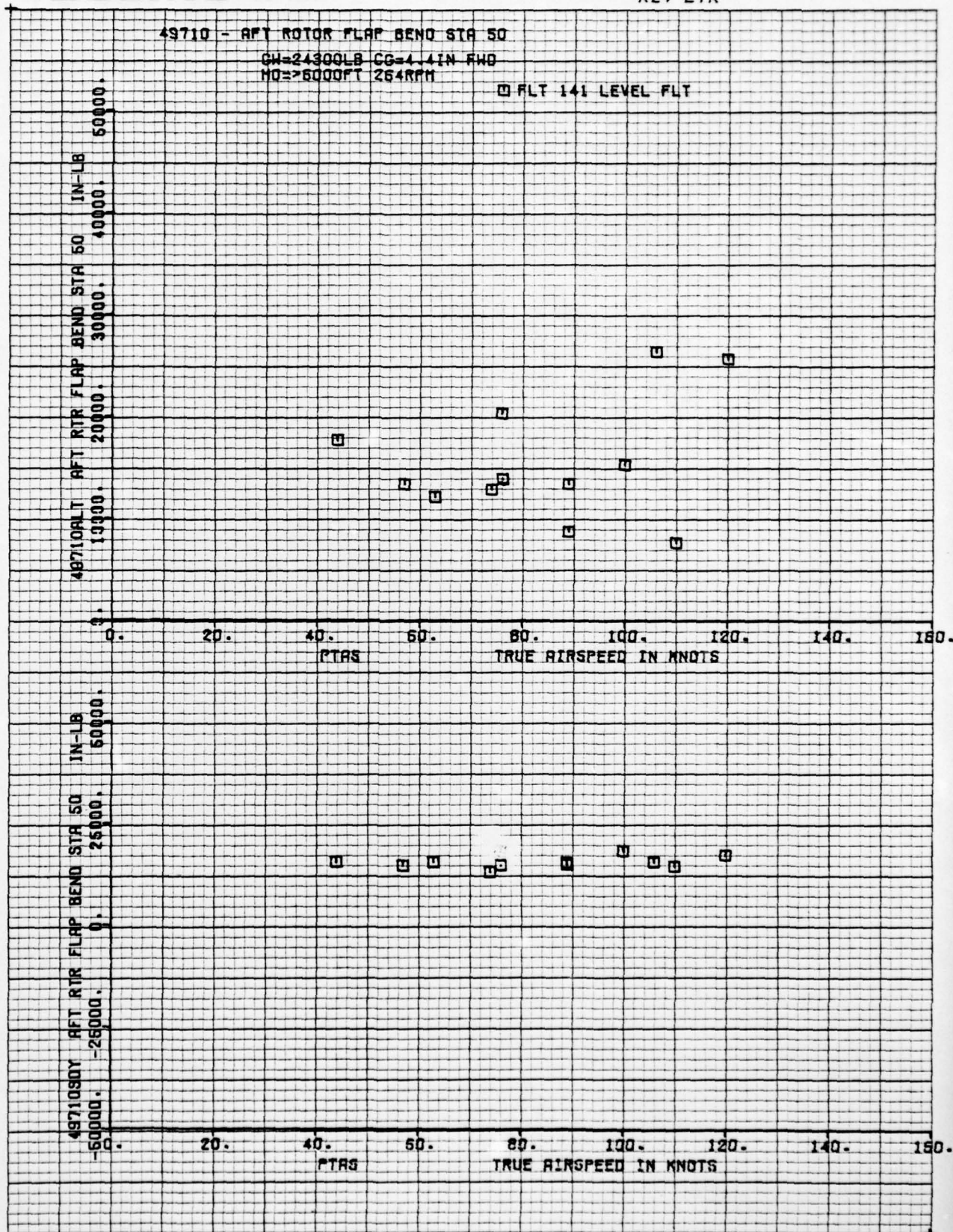


THE **BOEING** COMPANY

NUMBER **D210-11168-3**
REV LTR **VOLUME 4**



FORM 52300 (10/71)



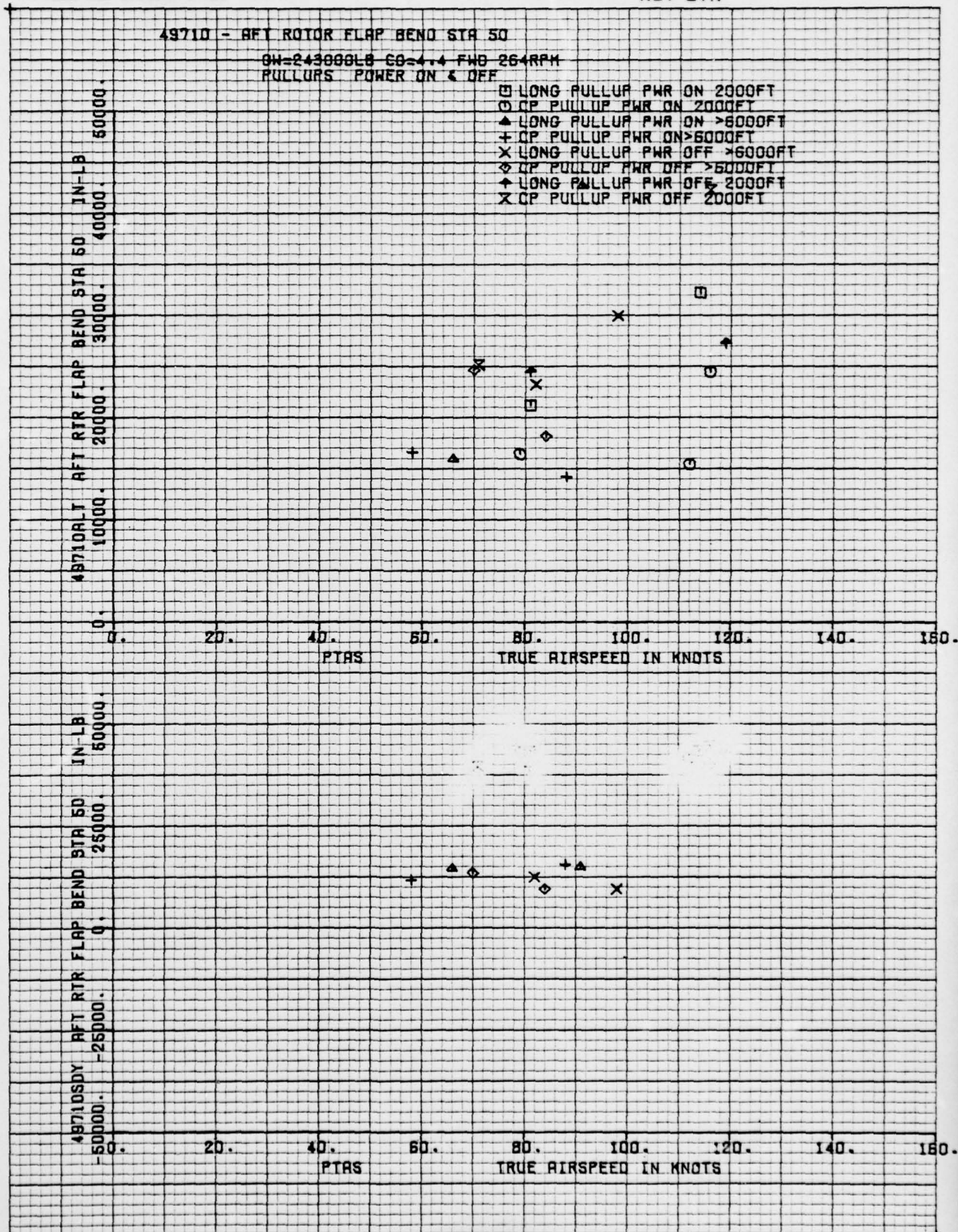
D210-11168-3

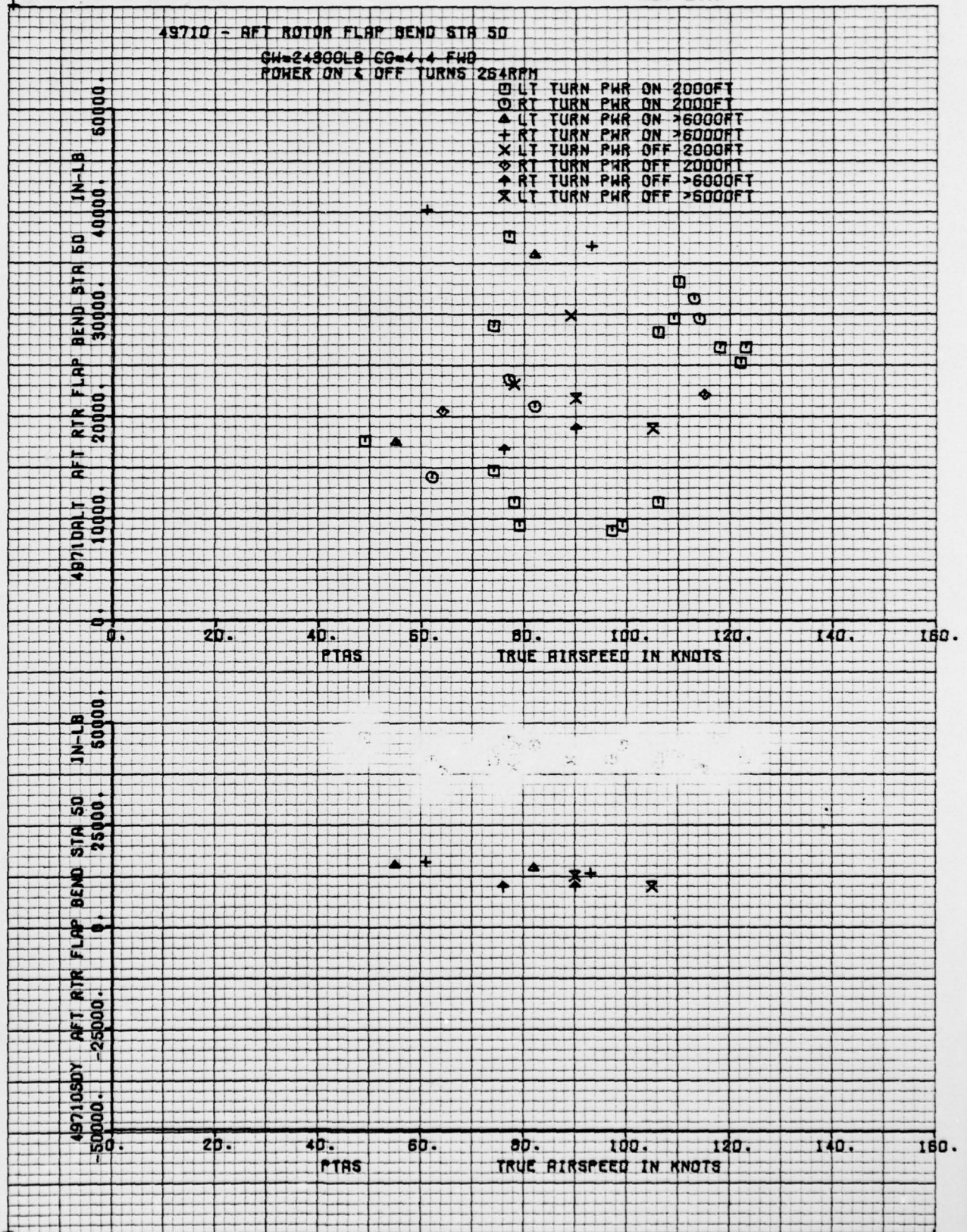
NUMBER **VOLUME 4**
REV LTRTHE **BOEING** COMPANY

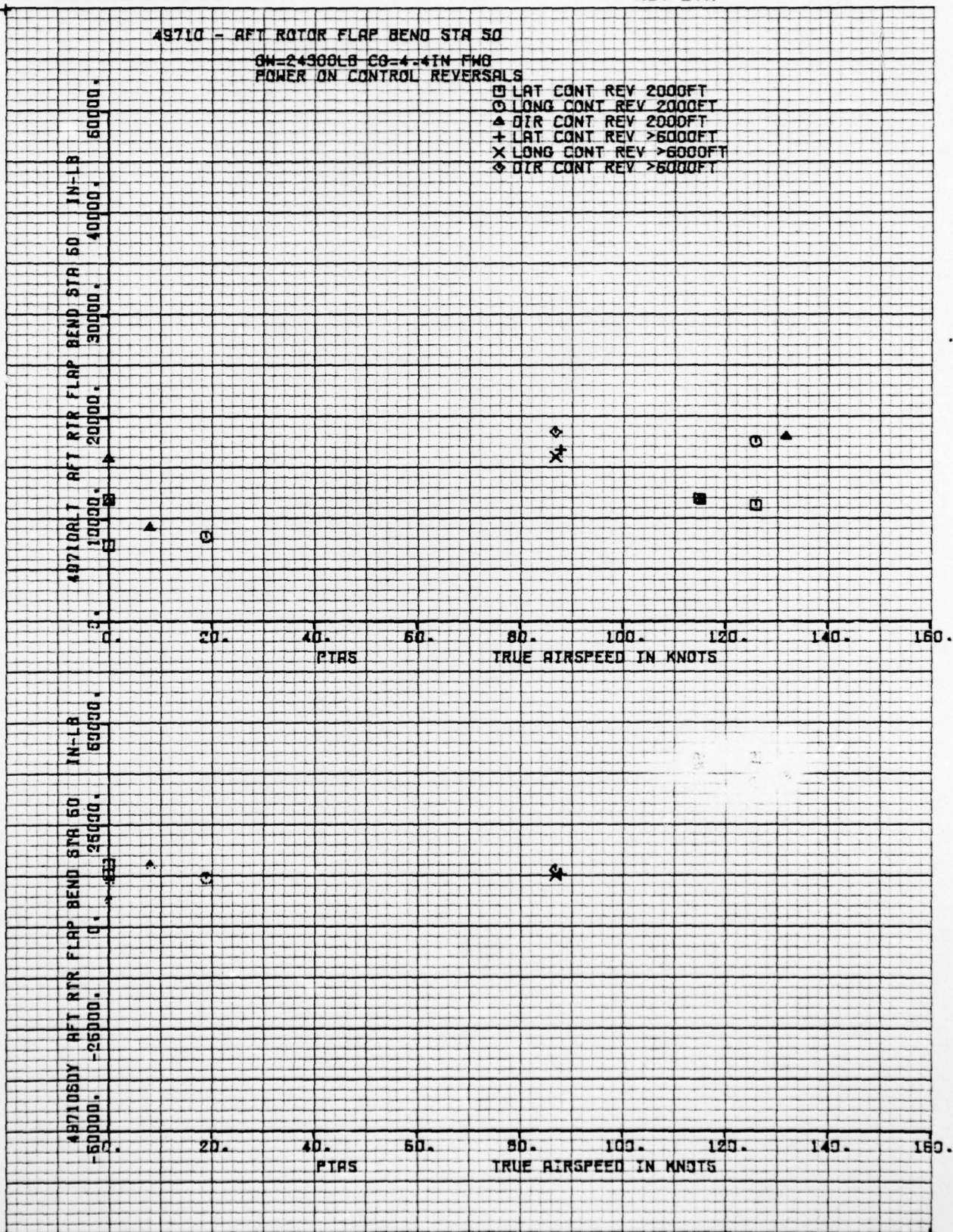
49710 - AFT ROTOR FLAP BEND STA 50

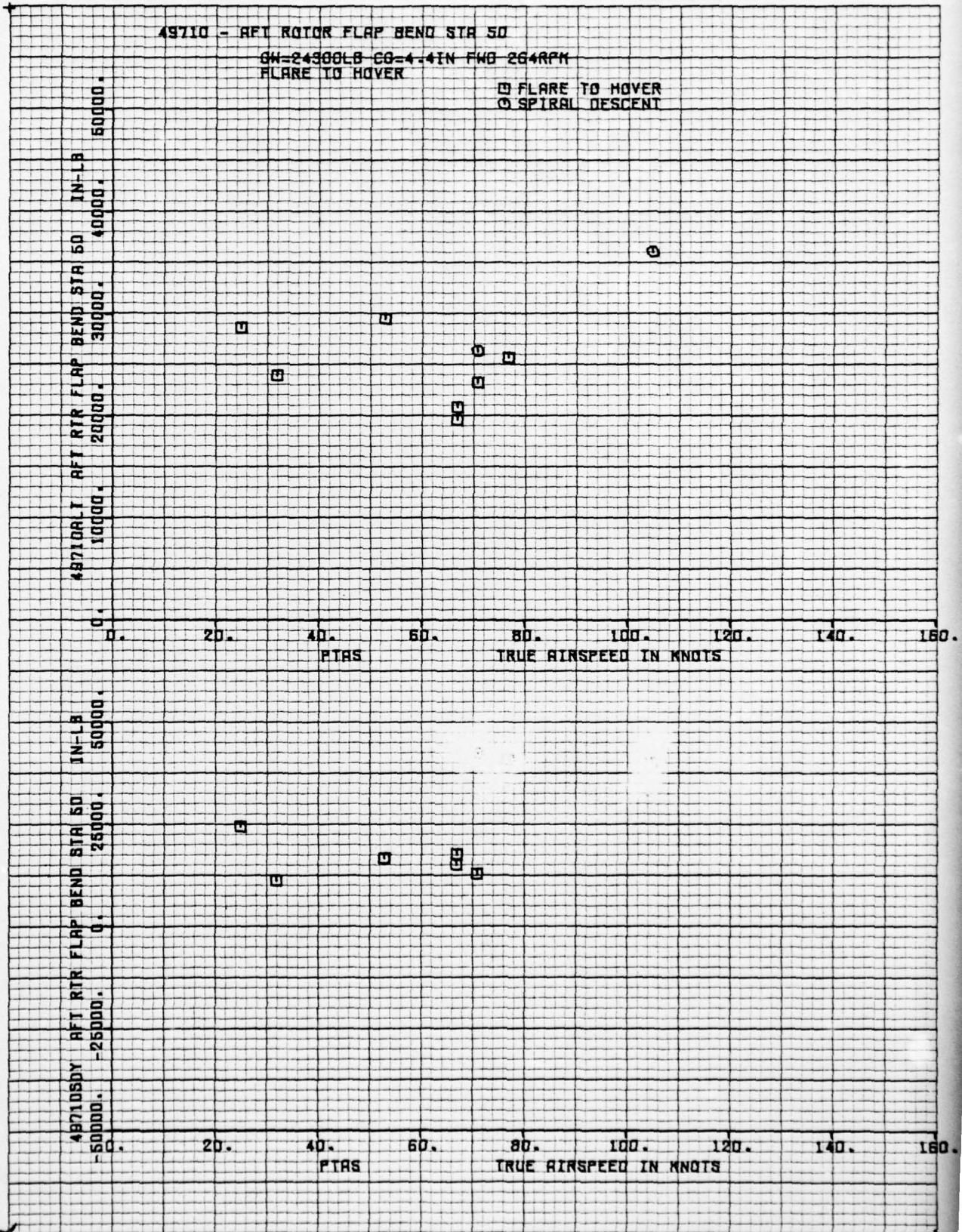
GW=243000LB CO=4.4 FWD 264RPM
PULLUPS POWER ON & OFF

- LONG PULLUP PWR ON 2000FT
- CP PULLUP PWR ON 2000FT
- ▲ LONG PULLUP PWR ON >6000FT
- + CP PULLUP PWR ON >6000FT
- × LONG PULLUP PWR OFF >6000FT
- ◇ CP PULLUP PWR OFF >6000FT
- ↑ LONG PULLUP PWR OFF 2000FT
- × CP PULLUP PWR OFF 2000FT





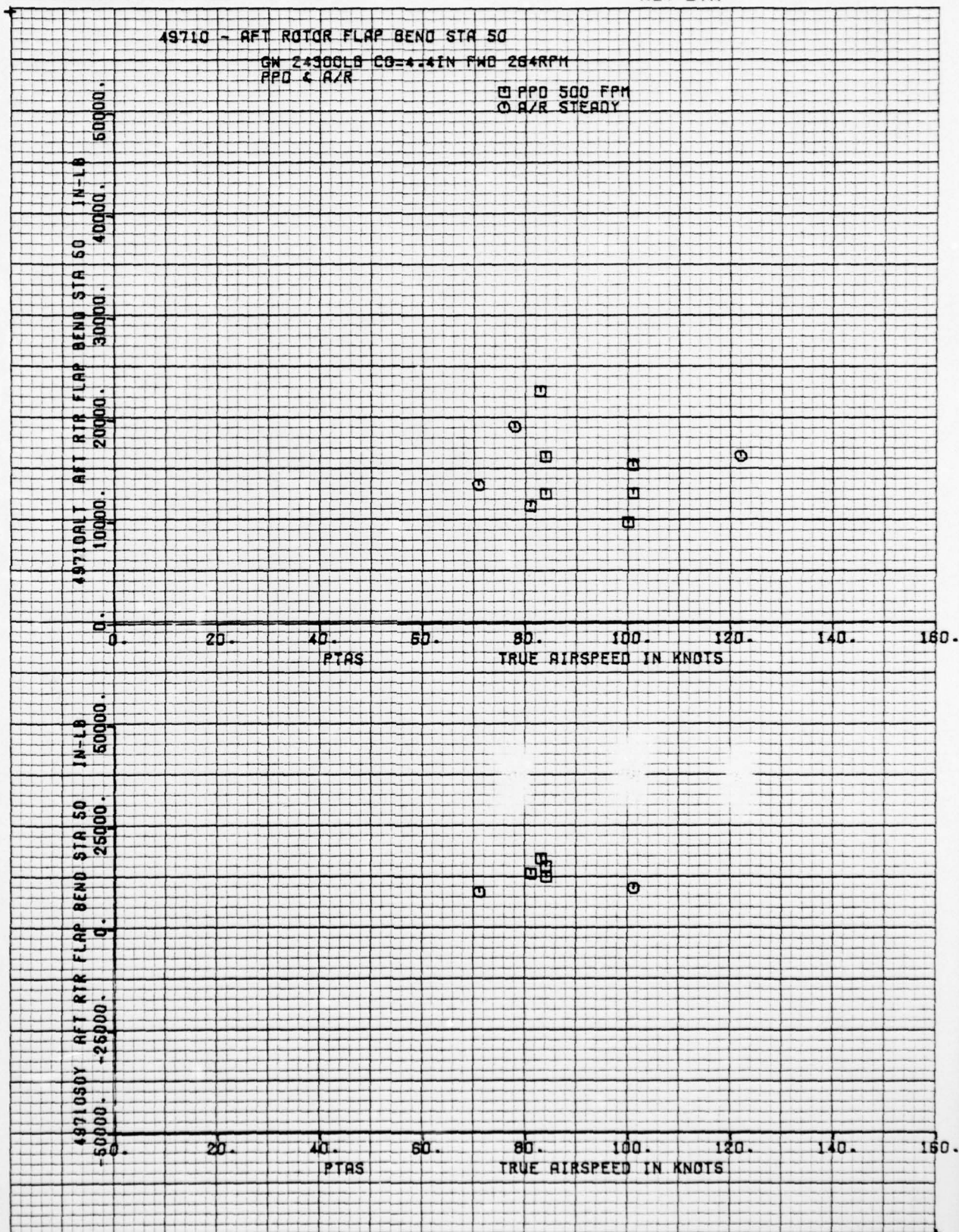




D210-1116S-3

NUMBER VOLUME 4
REV LTR

THE **BOEING** COMPANY

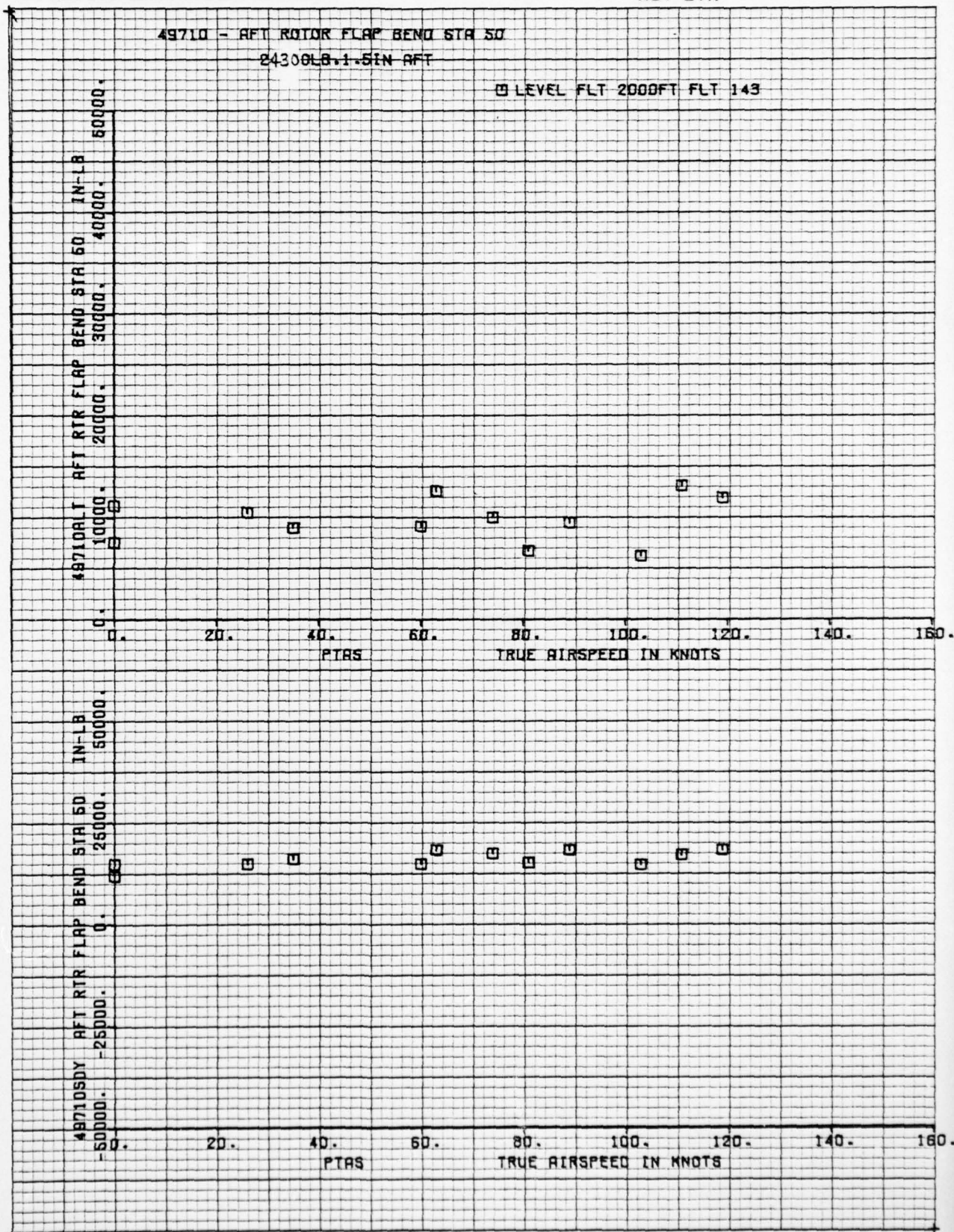


FORM 52300 (10/71)

D210-11168-3

NUMBER 1 VOLUME 4
REV LTR

THE **BOEING** COMPANY



THE **BOEING** COMPANY

PREPARED BY: J. Bendo

CHECKED BY:

DATE: 8/28/78

NUMBER D210-11168-3

REV LTR Volume 4

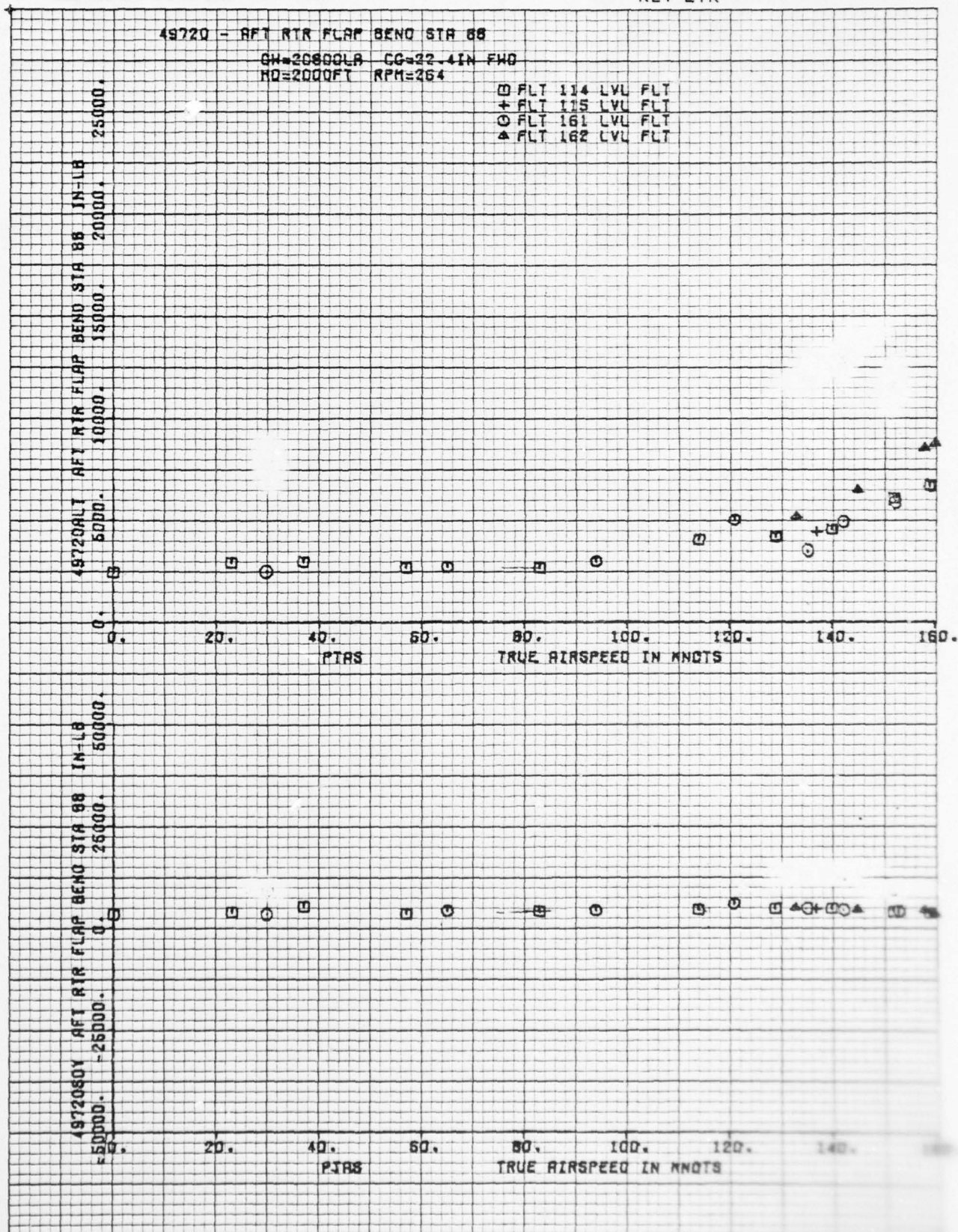
MODEL NO.

4.6 Aft Blade Flap Bending Station 88.

THE **BOEING** COMPANY

NUMBER
REV LTR

D210-11168-3
VOLUME 4



FORM 52300 (10/71)

AD-A075 613

BOEING VERTOL CO PHILADELPHIA PA

F/6 1/3

CH-46 COMPOSITE ROTOR BLADE FLIGHT STRESS SURVEY DATA. VOLUME I--ETC(U)

1978 R AIELLO, J BEND

N00019-75-C-0396.

UNCLASSIFIED

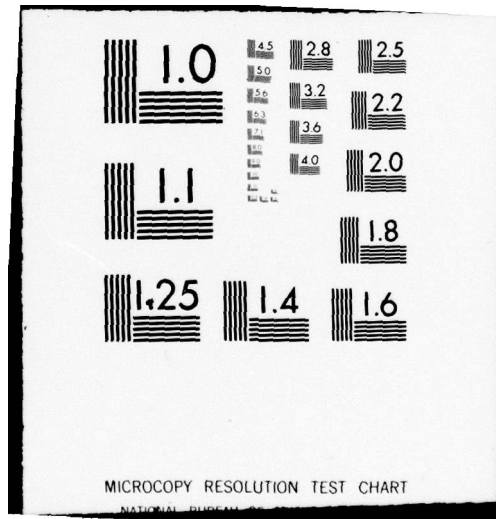
D210-11168-3-VOL-4

NL

3 OF 4

ADA
075613

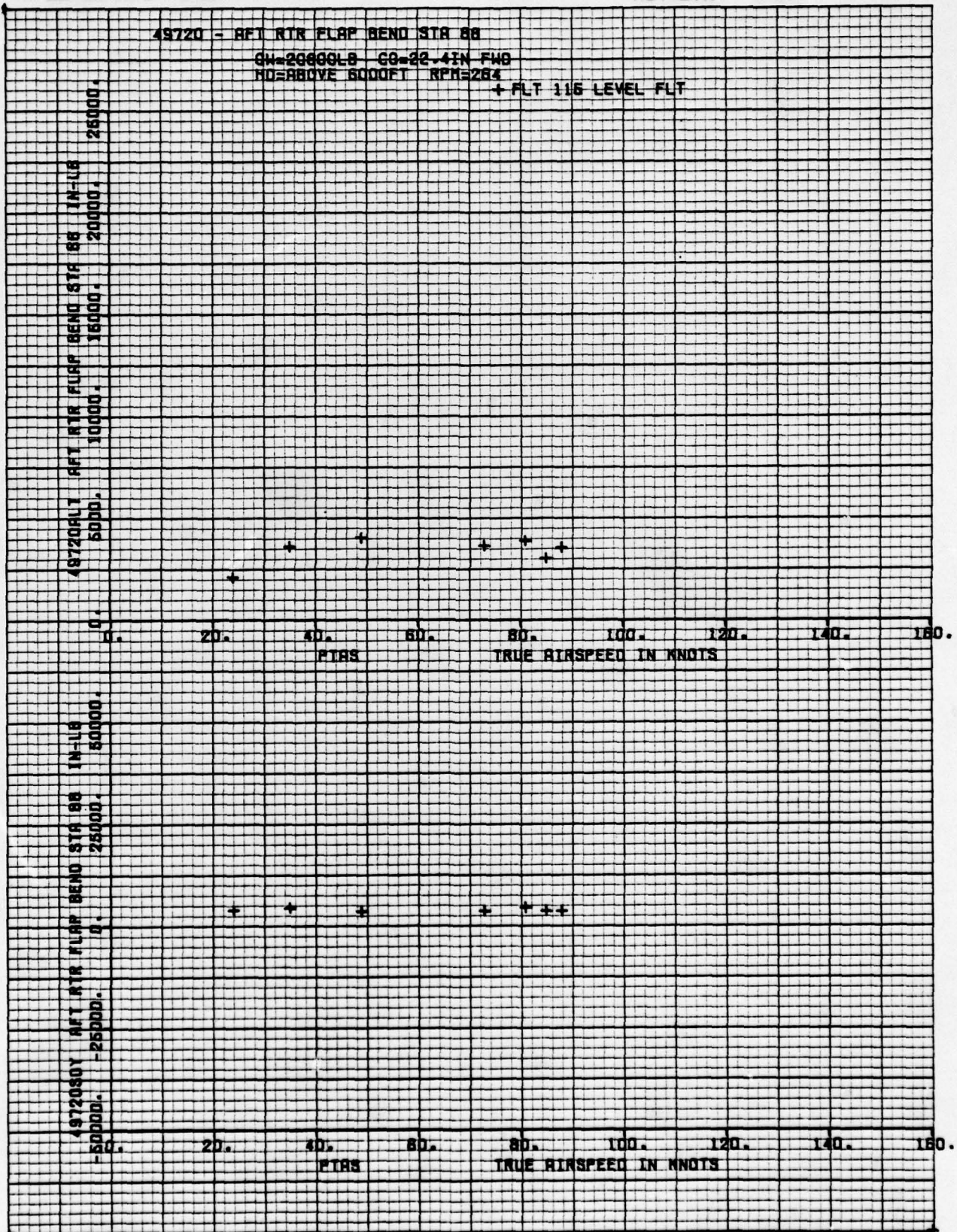




THE **BOEING** COMPANY

NUMBER
REV LTR

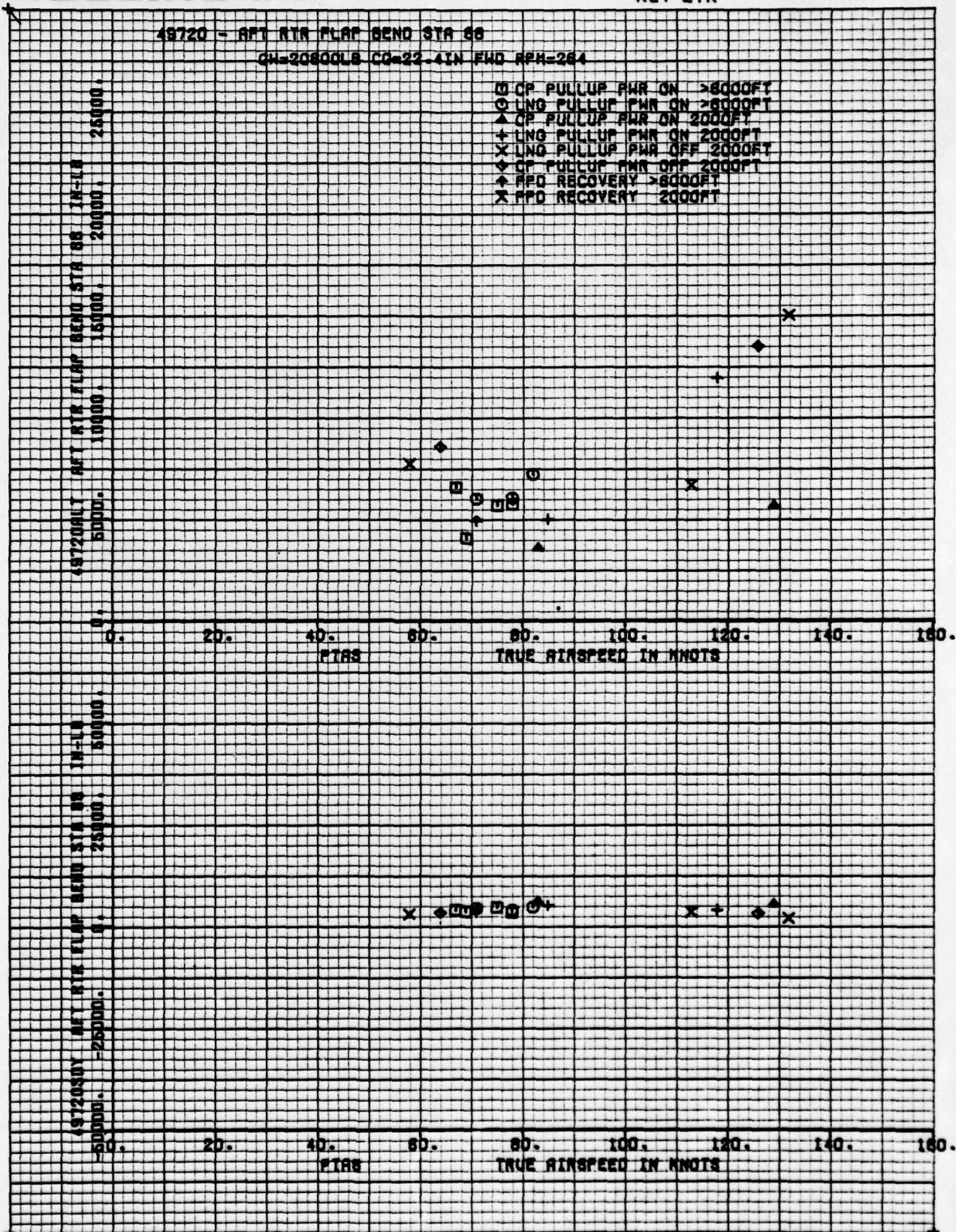
D210-11168-3
VOLUME 4

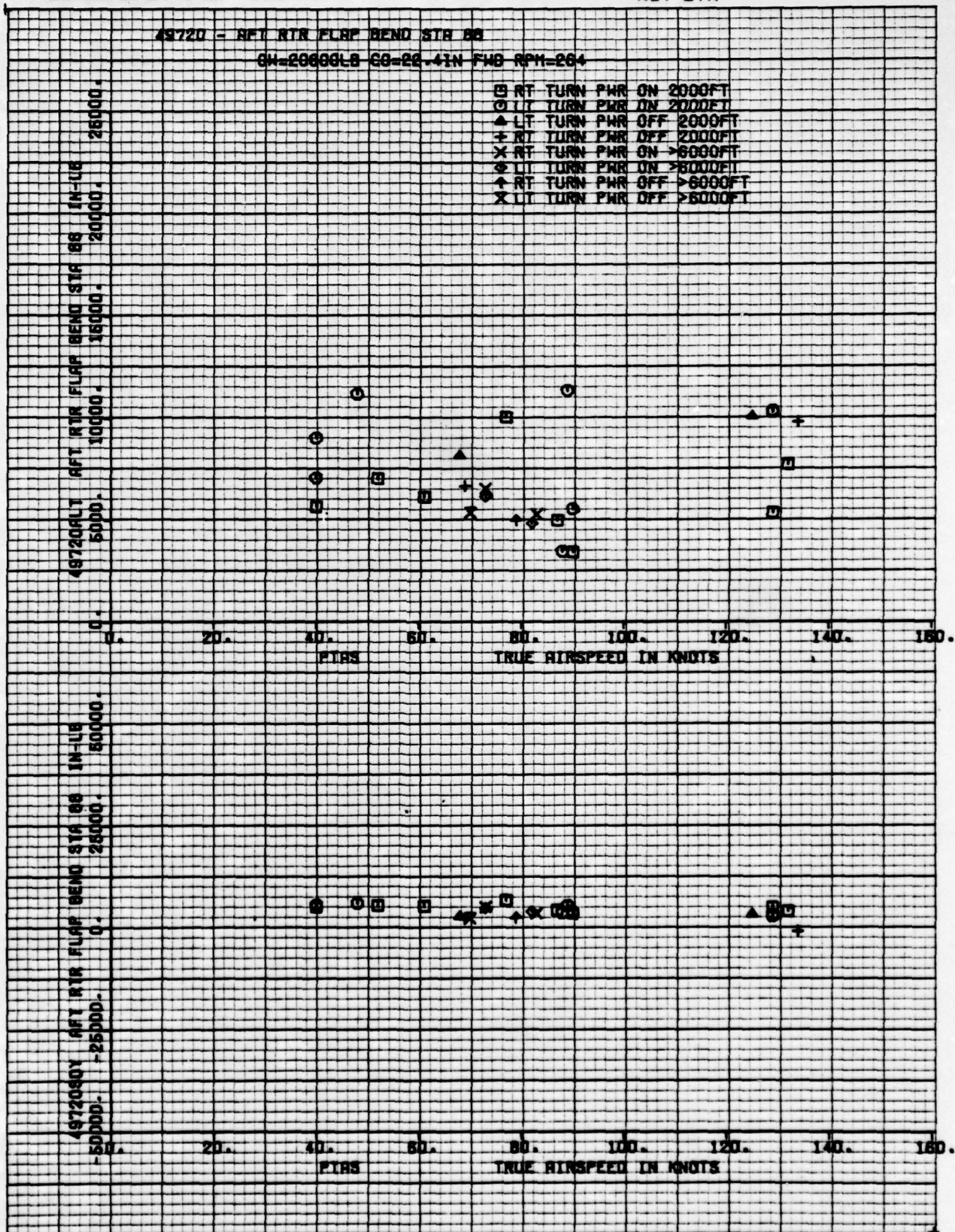


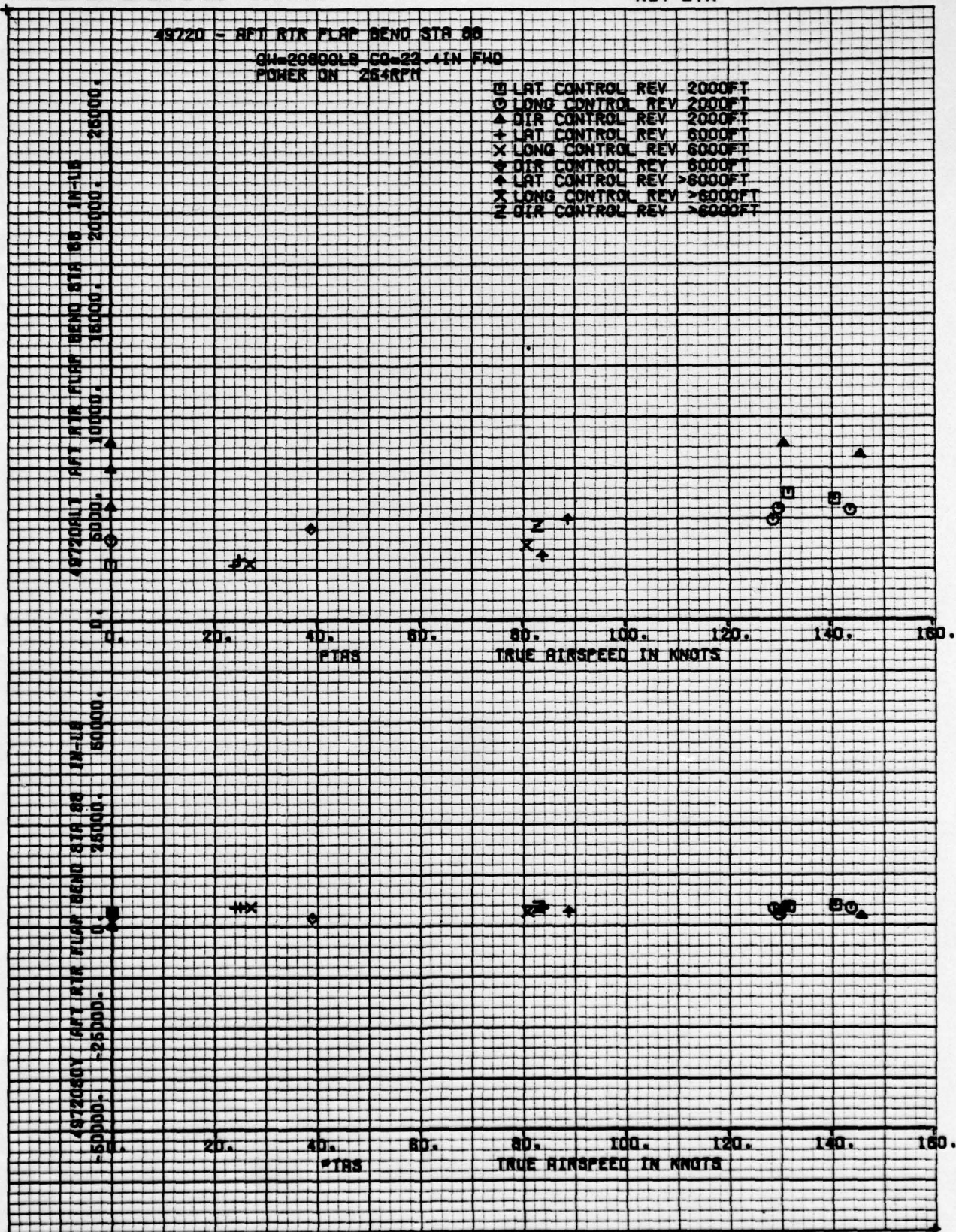
FORM 52300 (10/71)

THE **BOEING** COMPANY

D210-11168-3
NUMBER :
REV LTR VOLUME 4



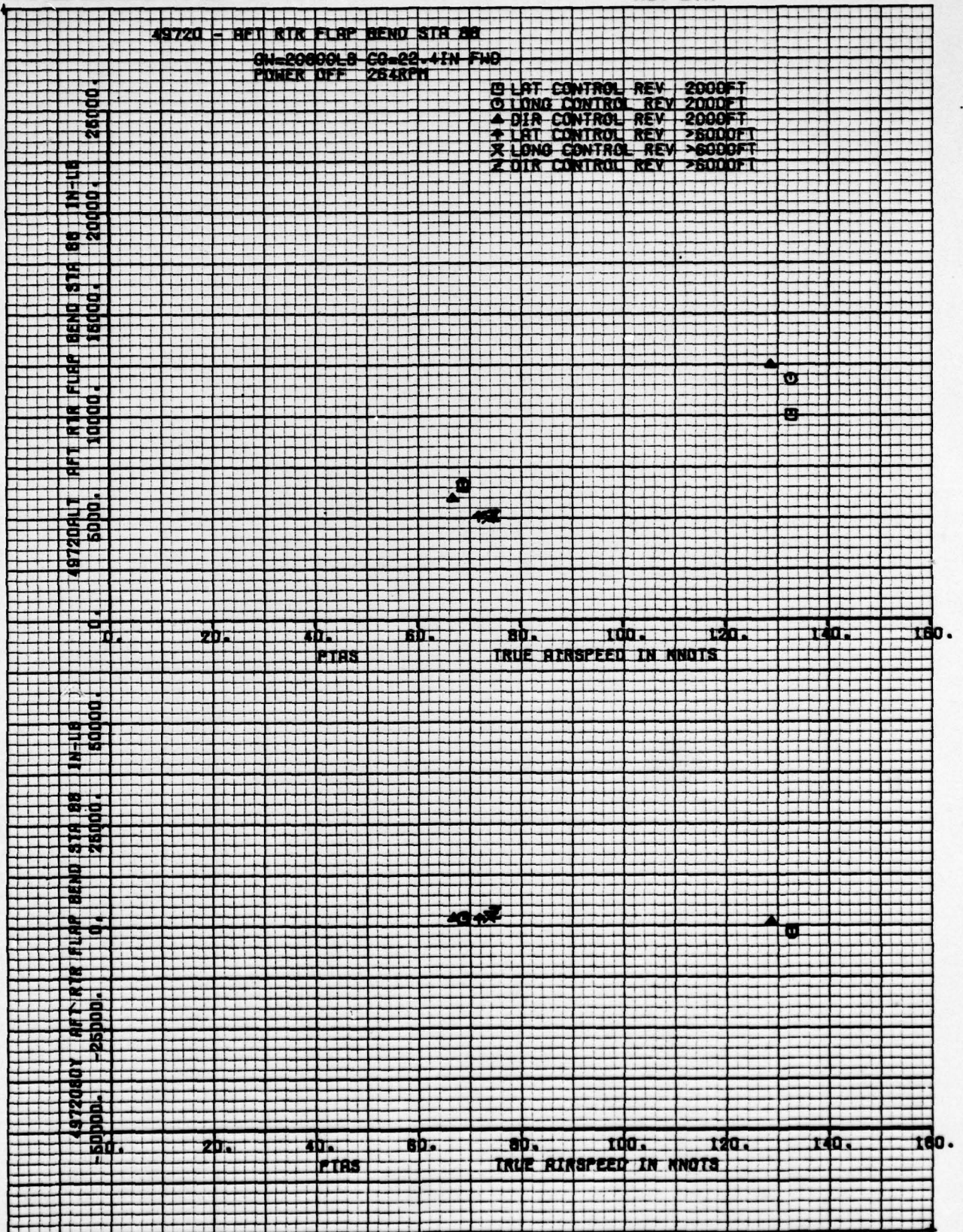




THE **BOEING** COMPANY

NUMBER
REV LTR

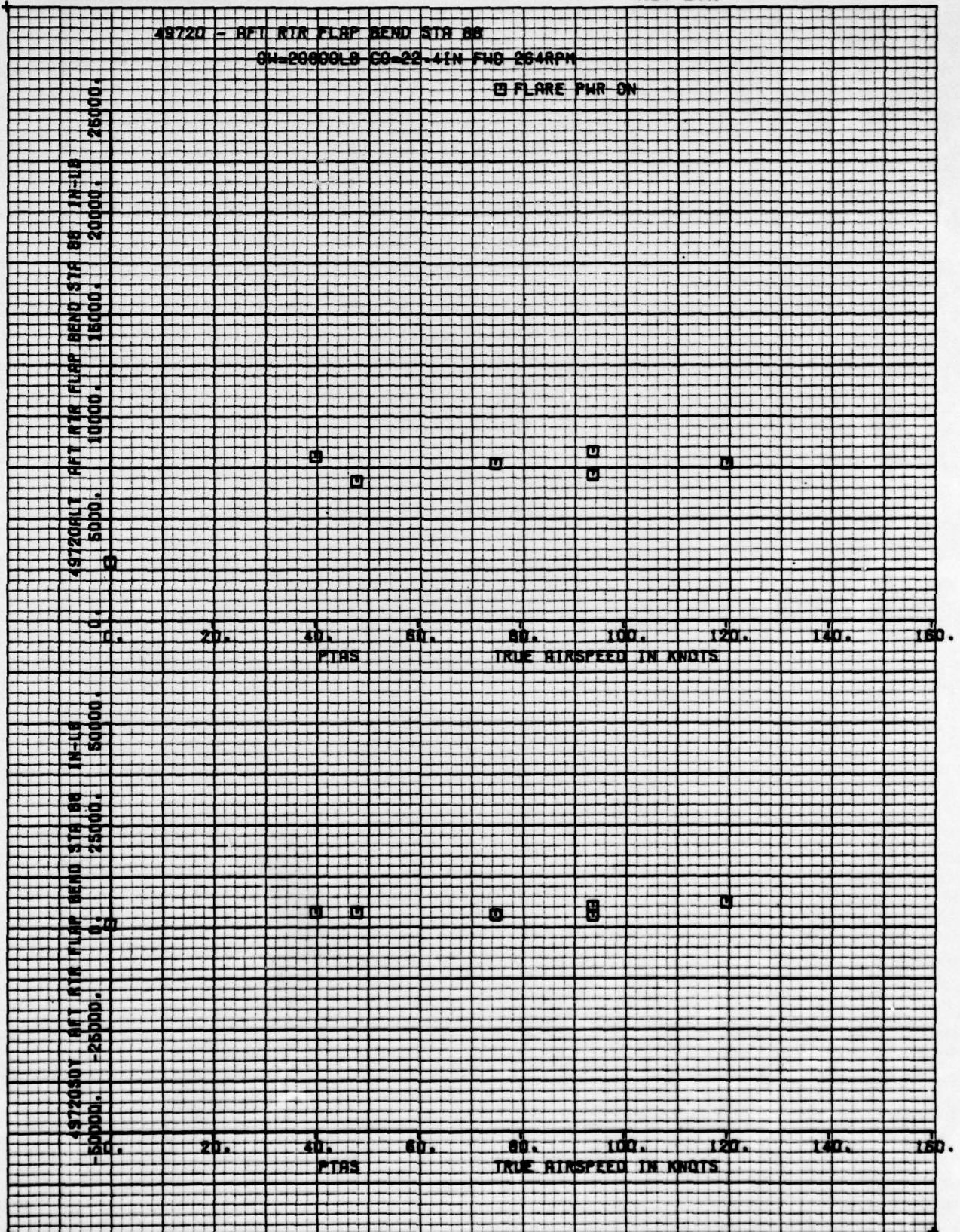
D210-11168-3
VOLUME 4



FORM 52300 (10/71)

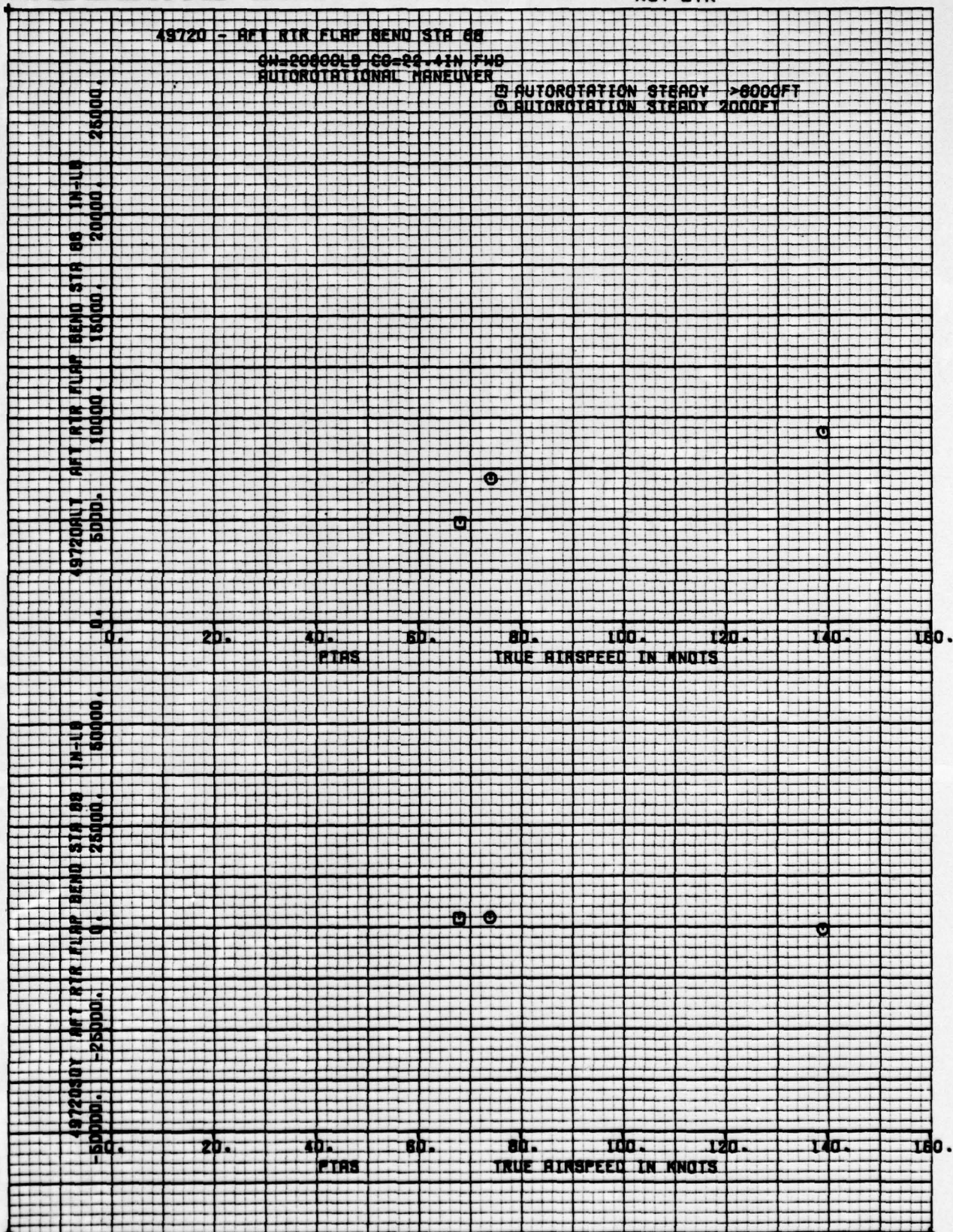
THE **BOEING** COMPANY

D210-11168-3
NUMBER 1 VOLUME 4
REV LTR



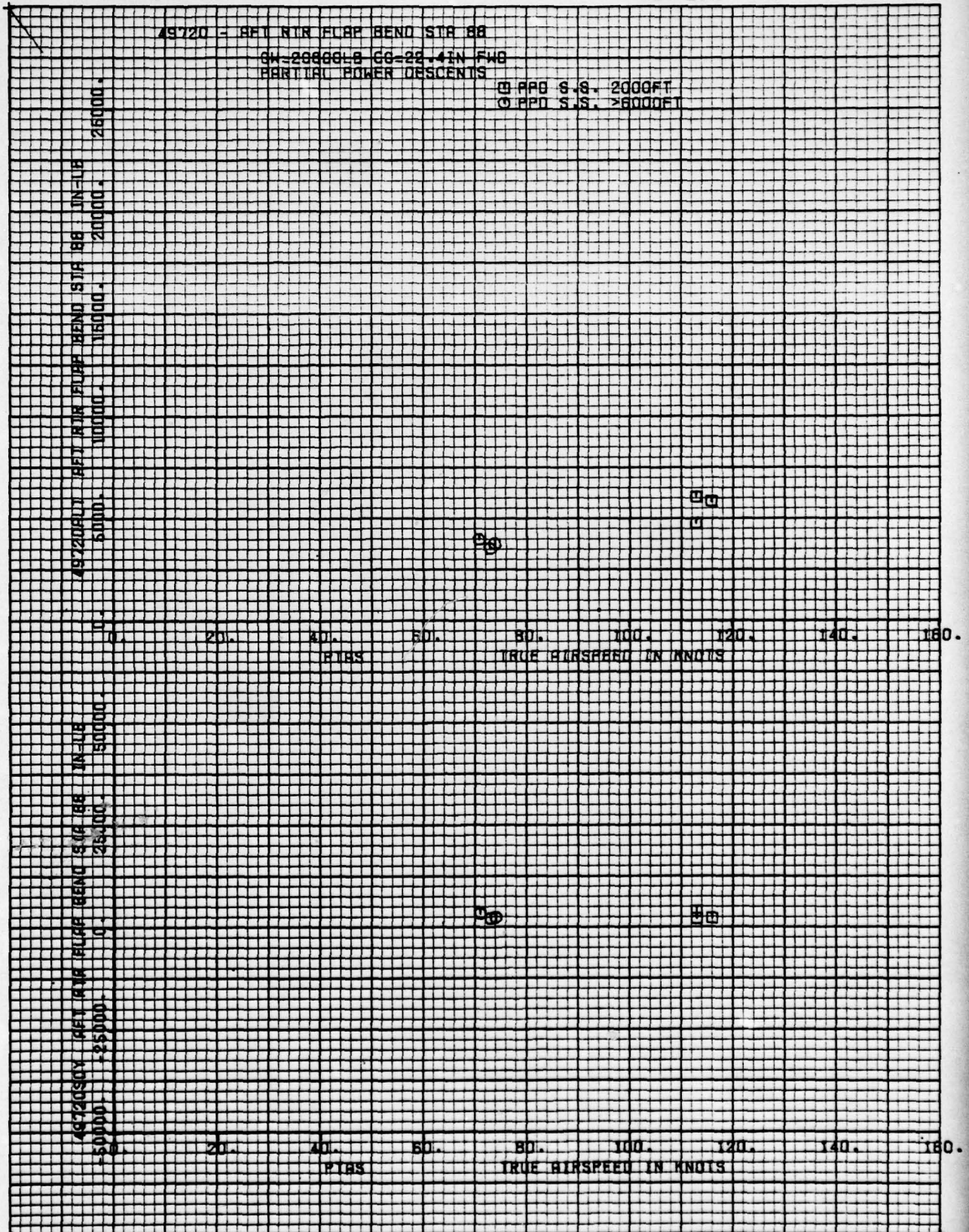
THE **BOEING** COMPANY

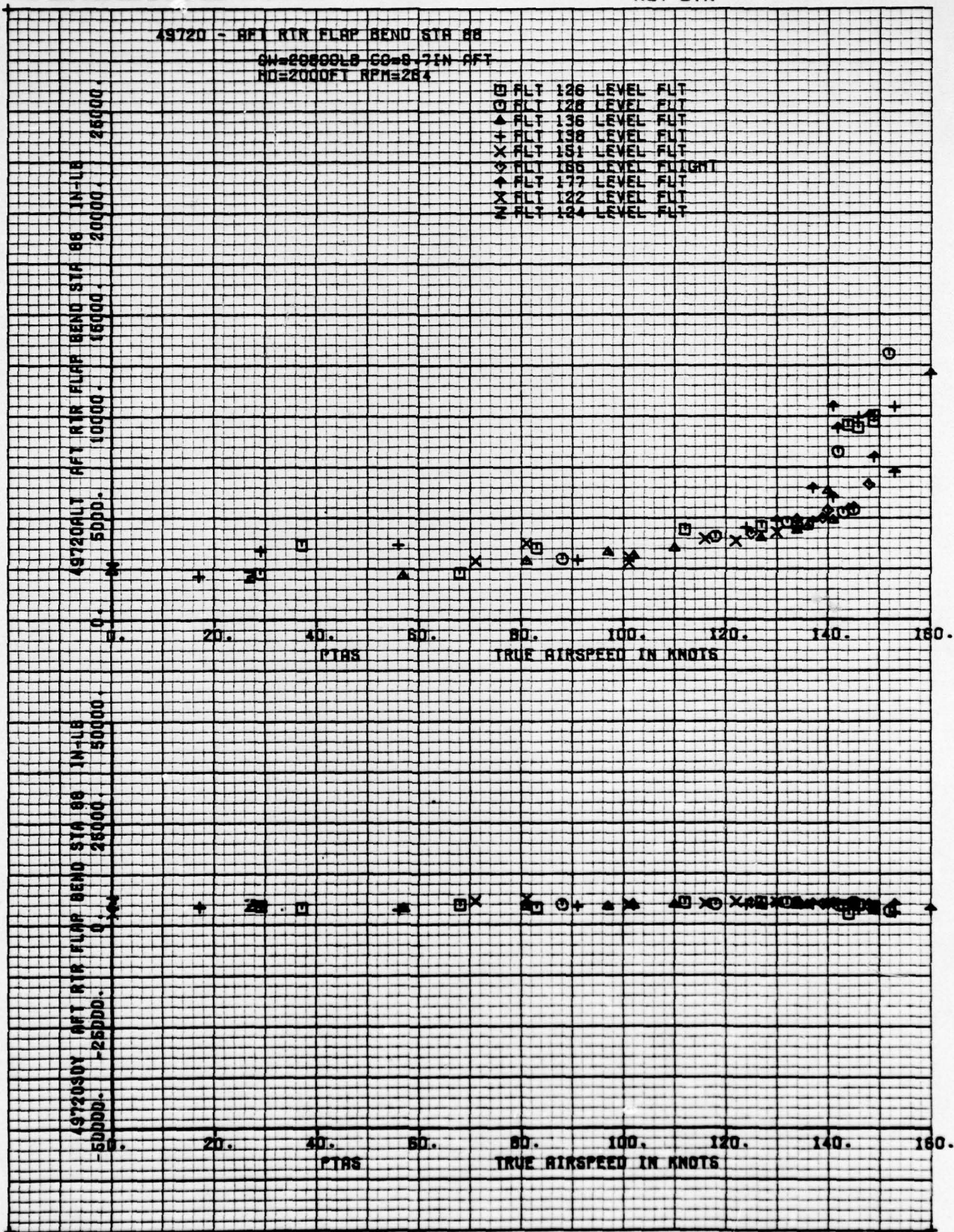
D210-11168-3
NUMBER ^F VOLUME 4
REV LTR

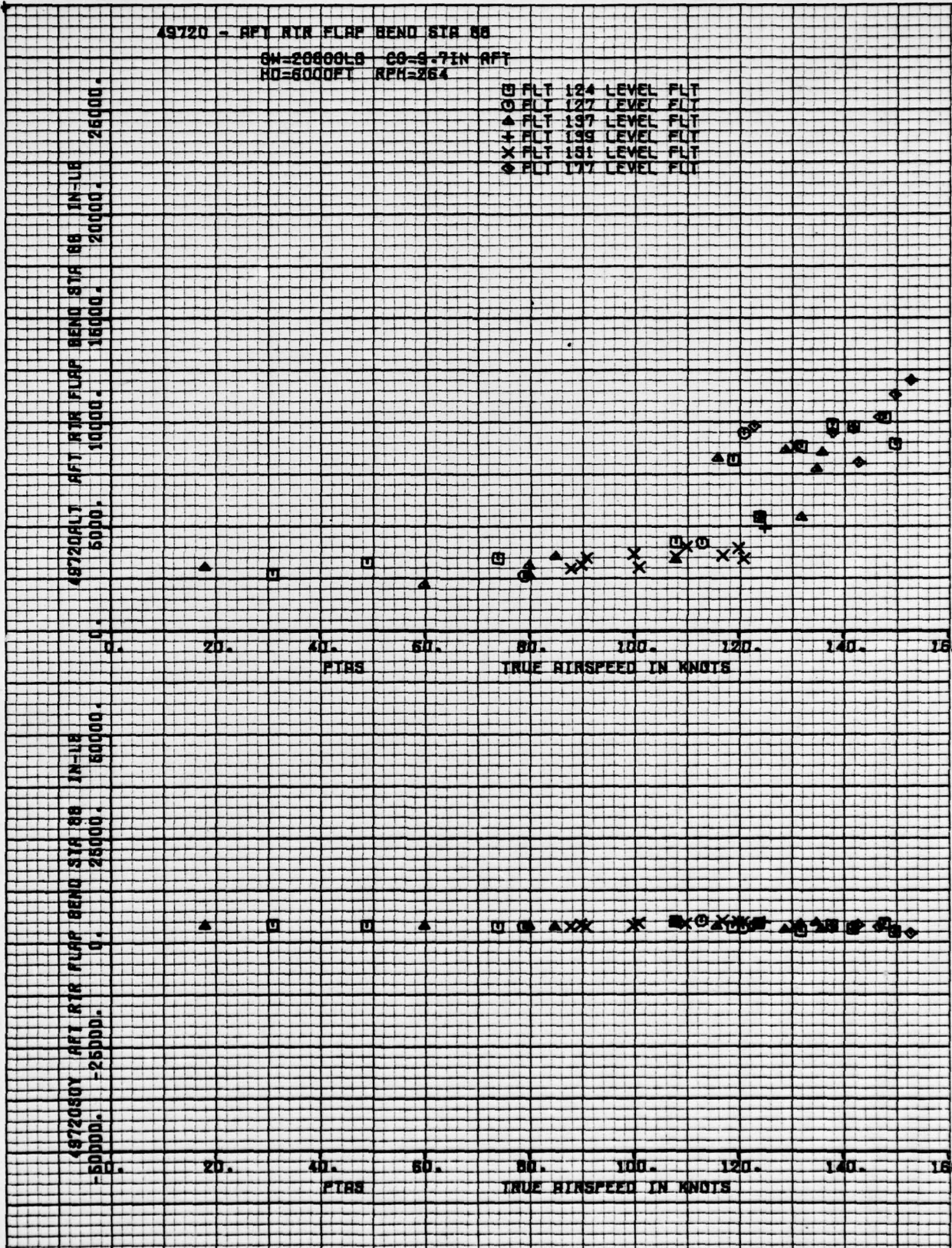


THE **BOEING** COMPANY

D210-11168-3
NUMBER 1 VOLUME 4
REV LTR

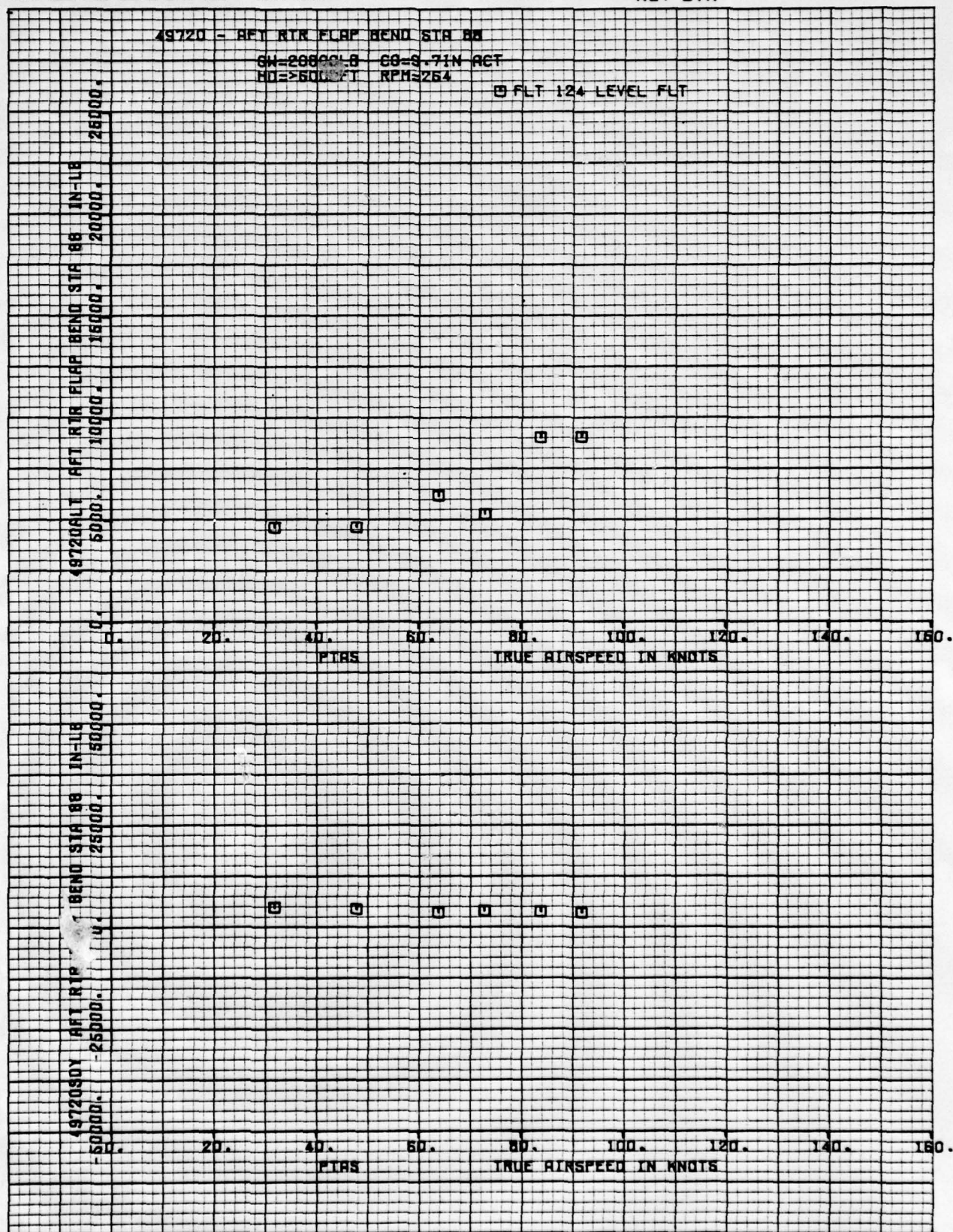






THE **BOEING** COMPANY

D210-11168-3
NUMBER
REV LTR
VOLUME 4

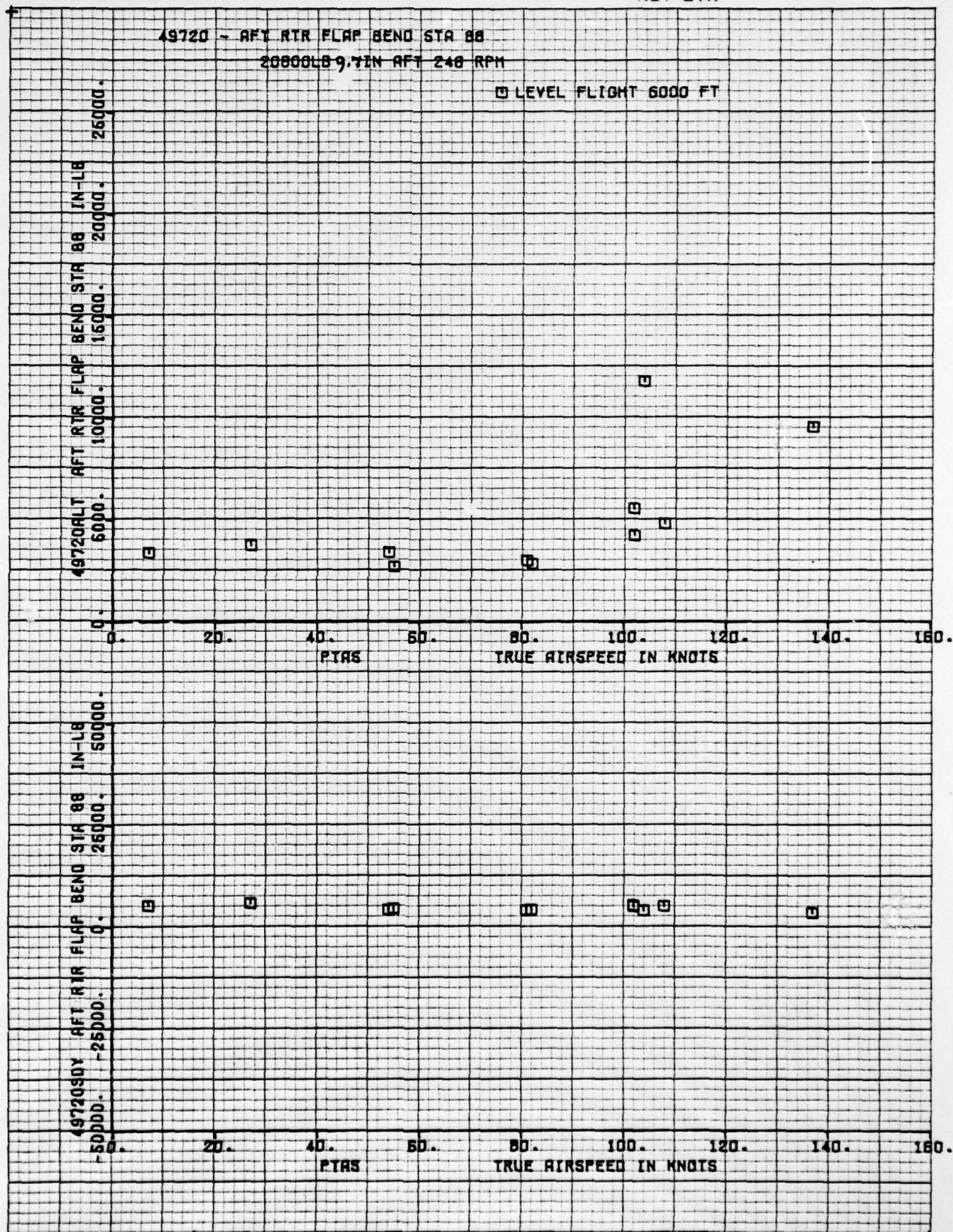


D210-11168-3

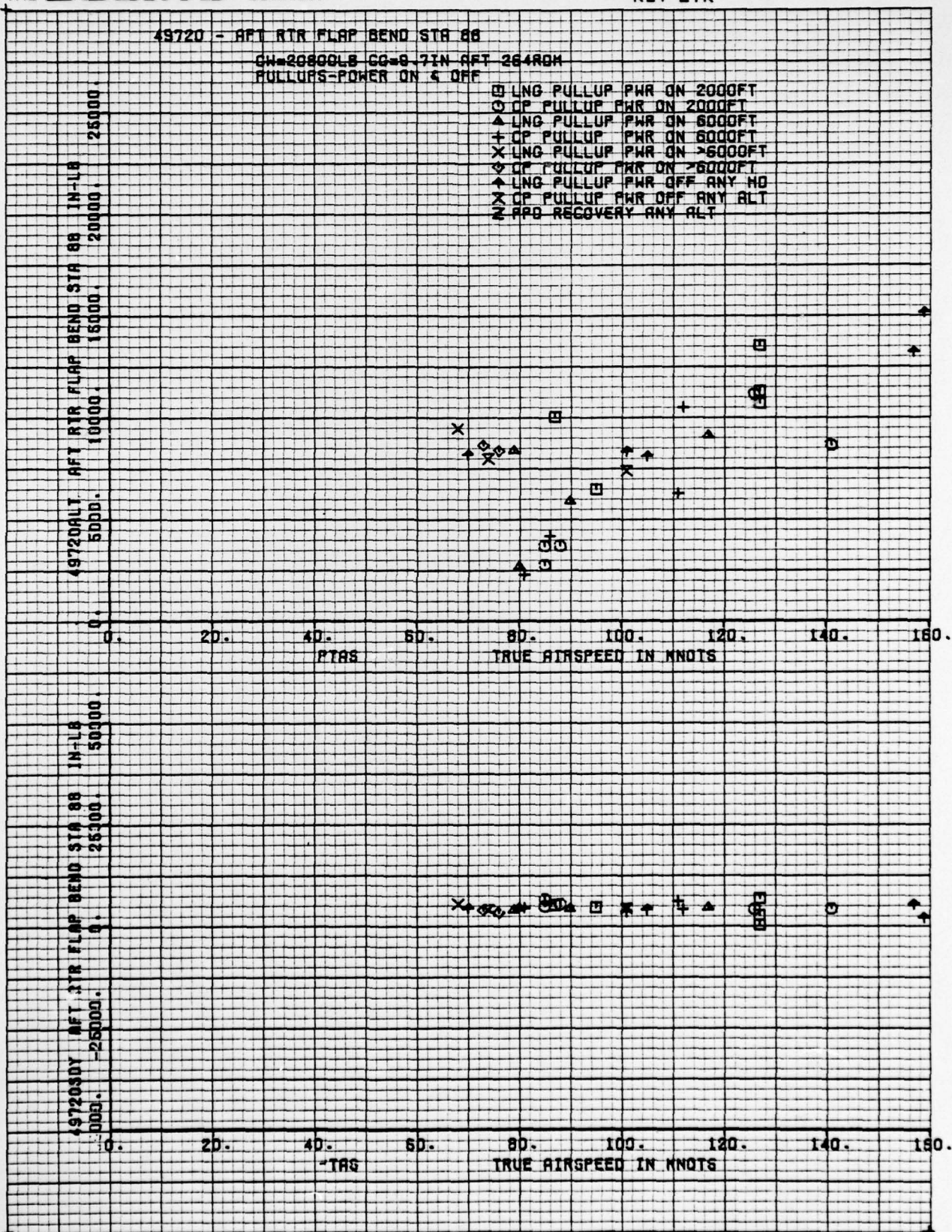
NUMBER
REV LTR

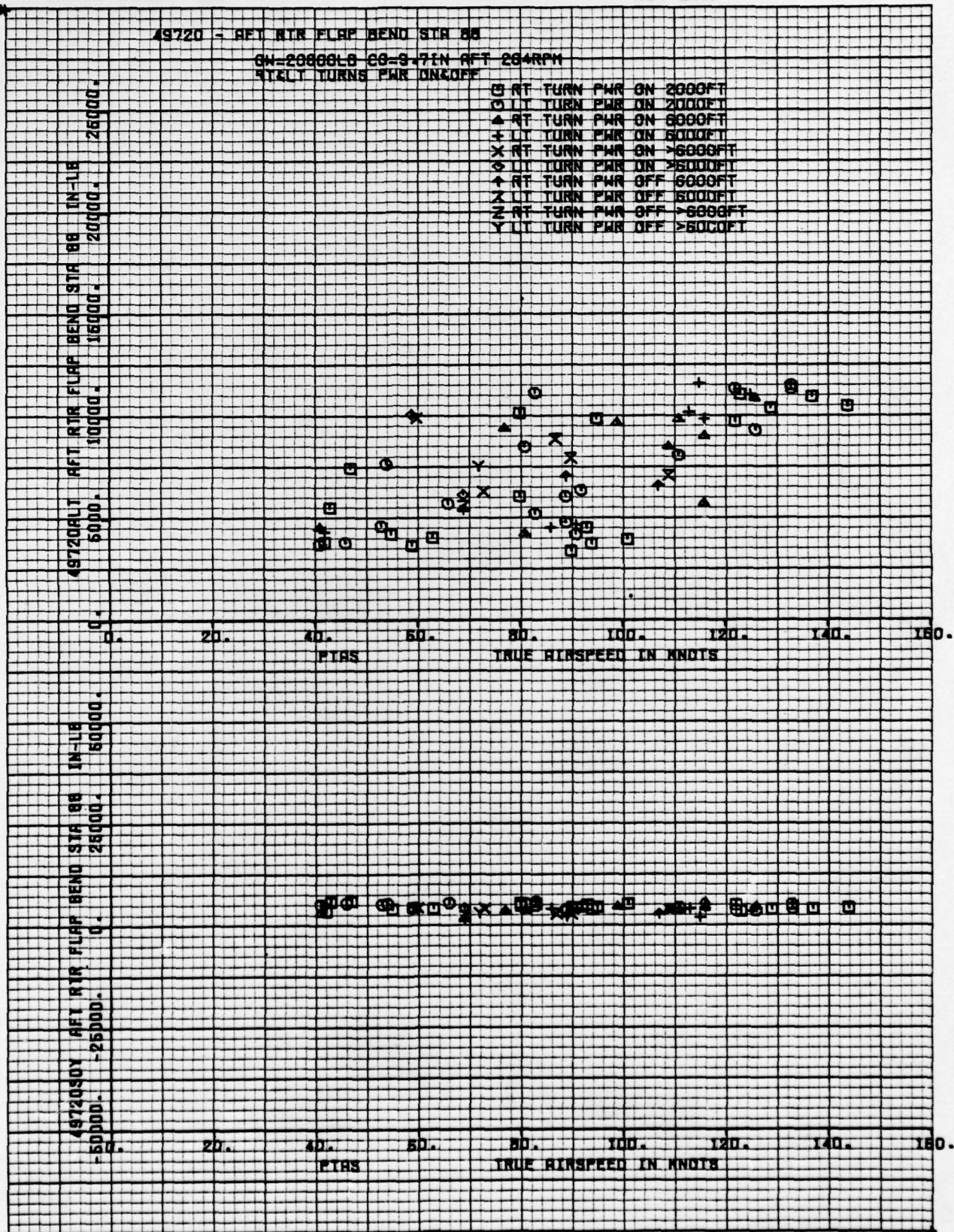
VOLUME 4

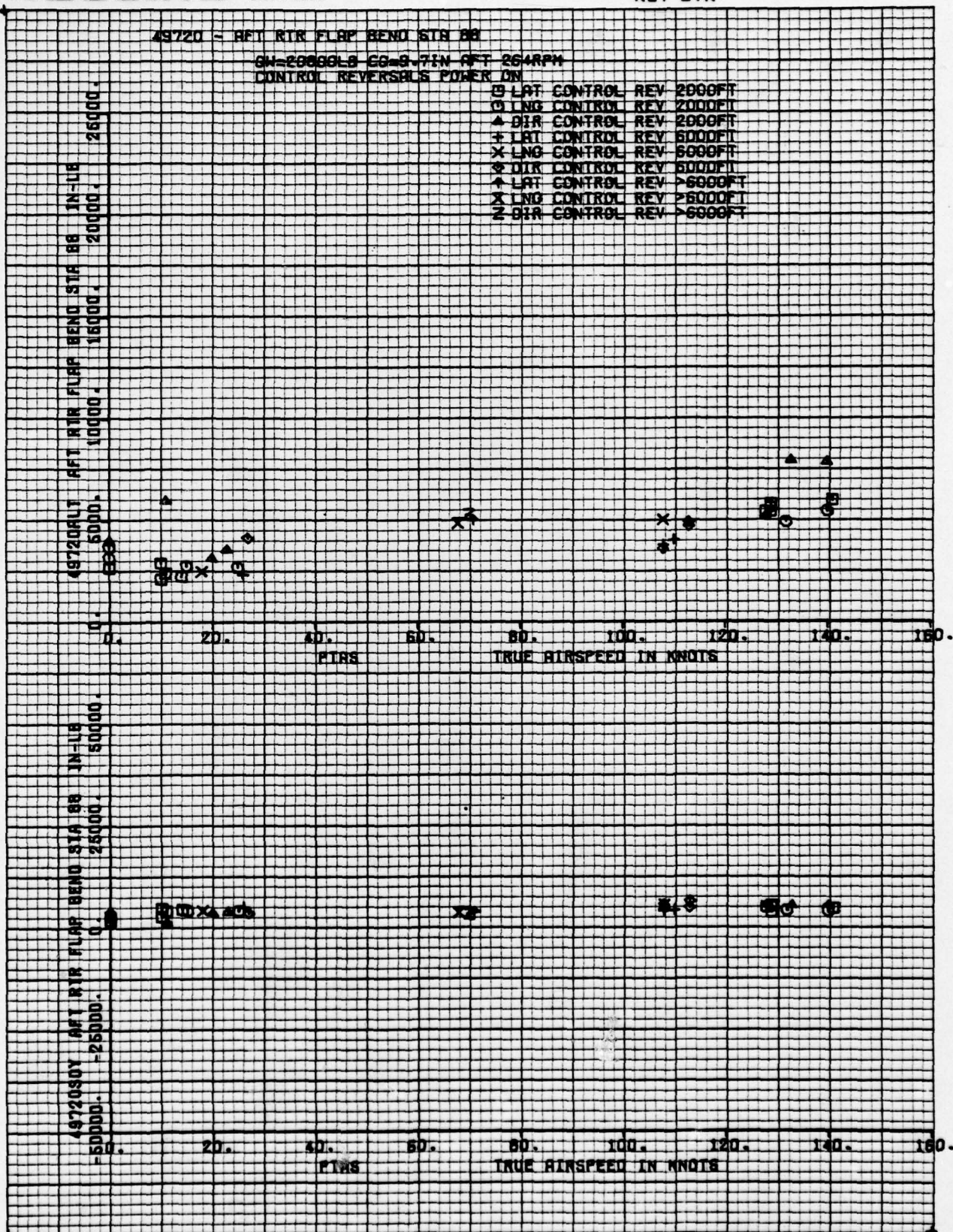
THE **BOEING** COMPANY

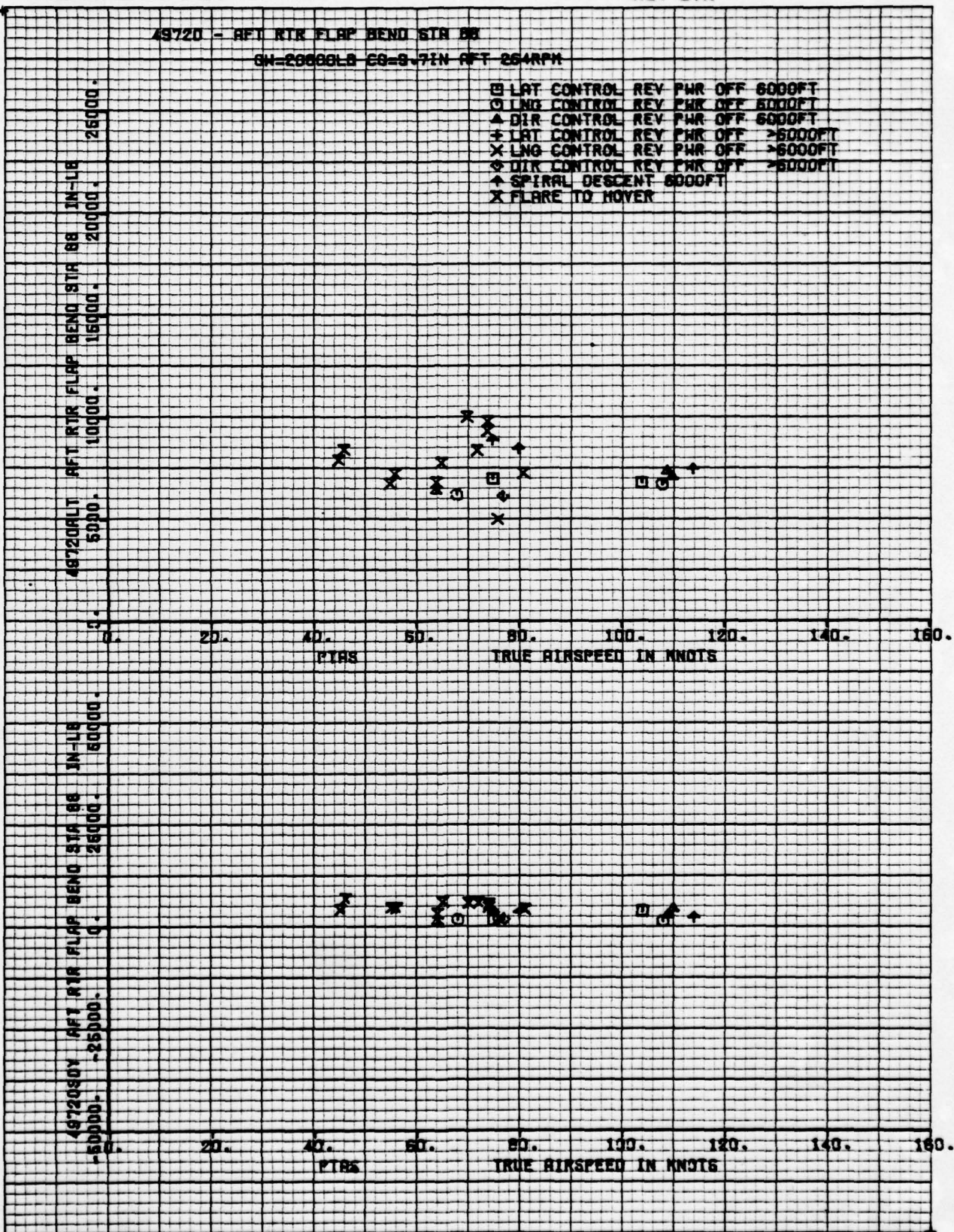


FORM 52300 (10/71)



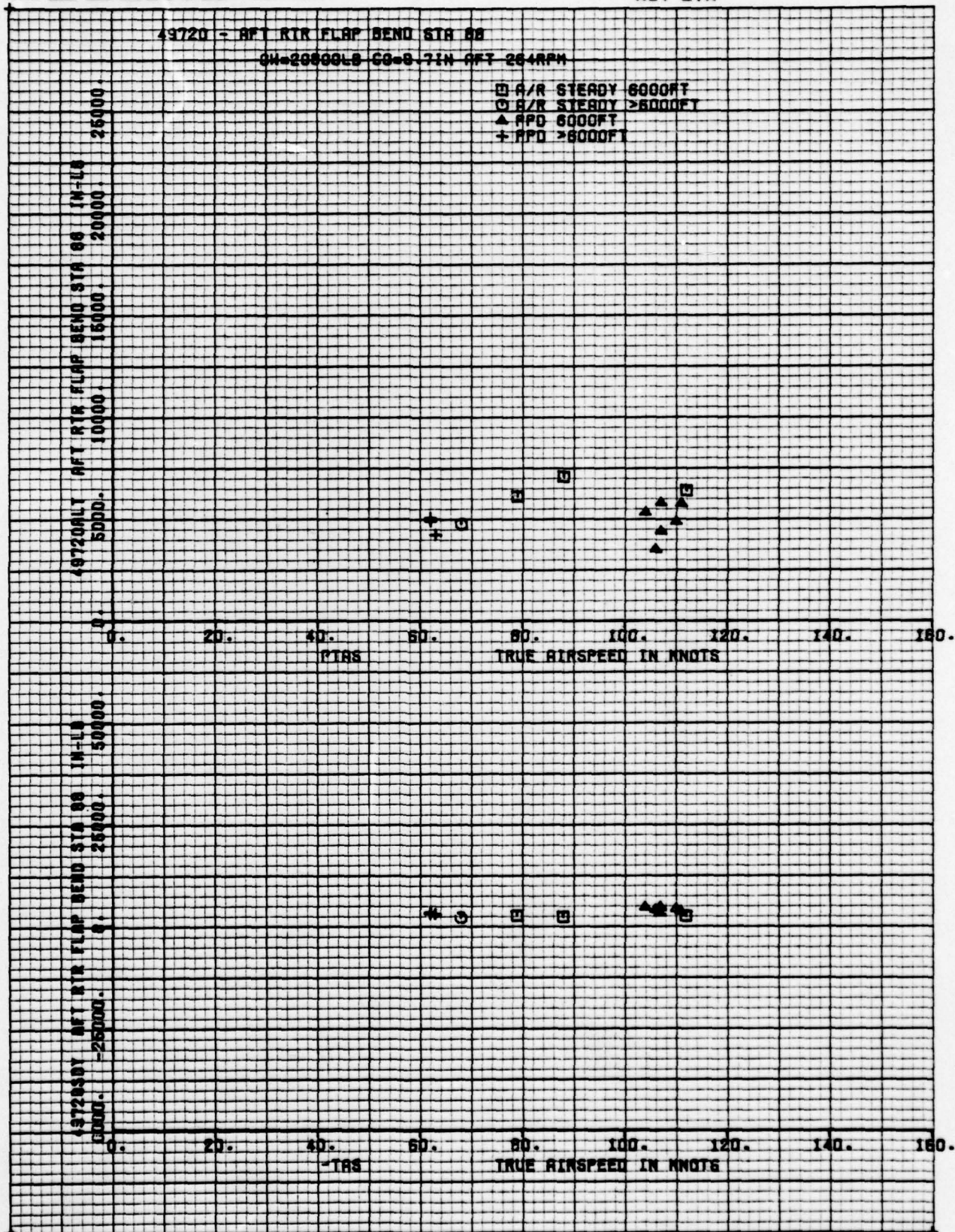


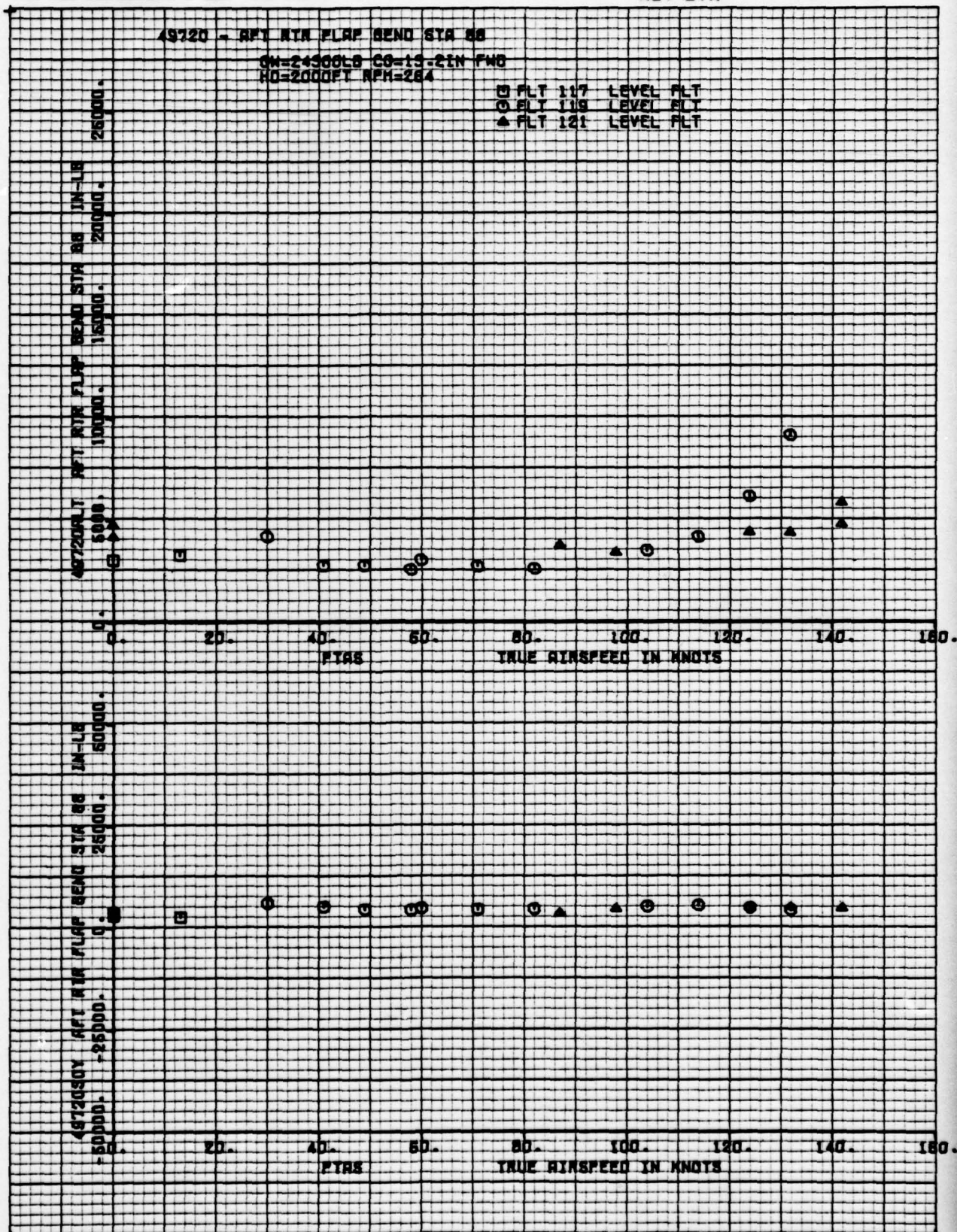




THE **BOEING** COMPANY

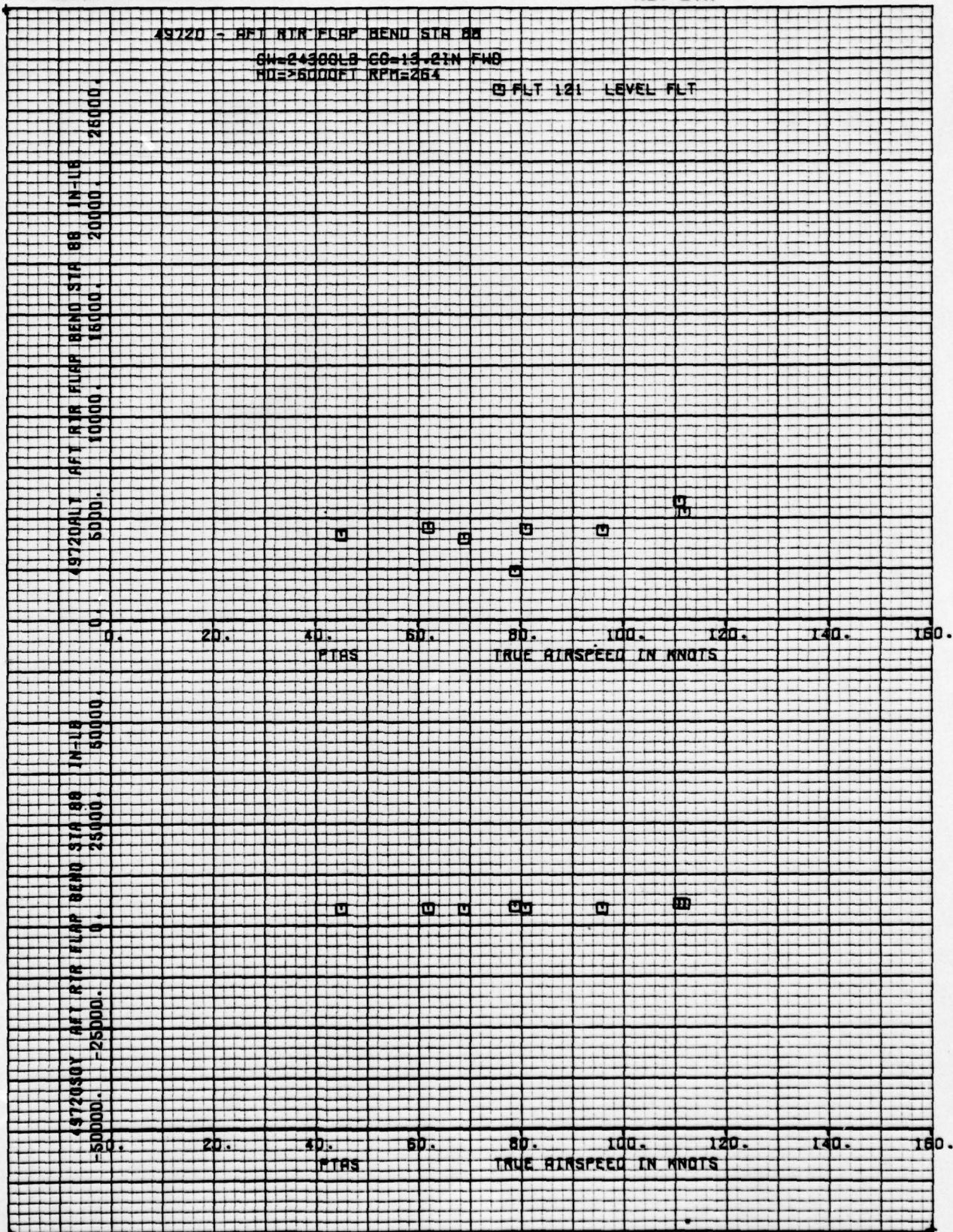
D210-11168-3
NUMBER 1 VOLUME 4
REV LTR

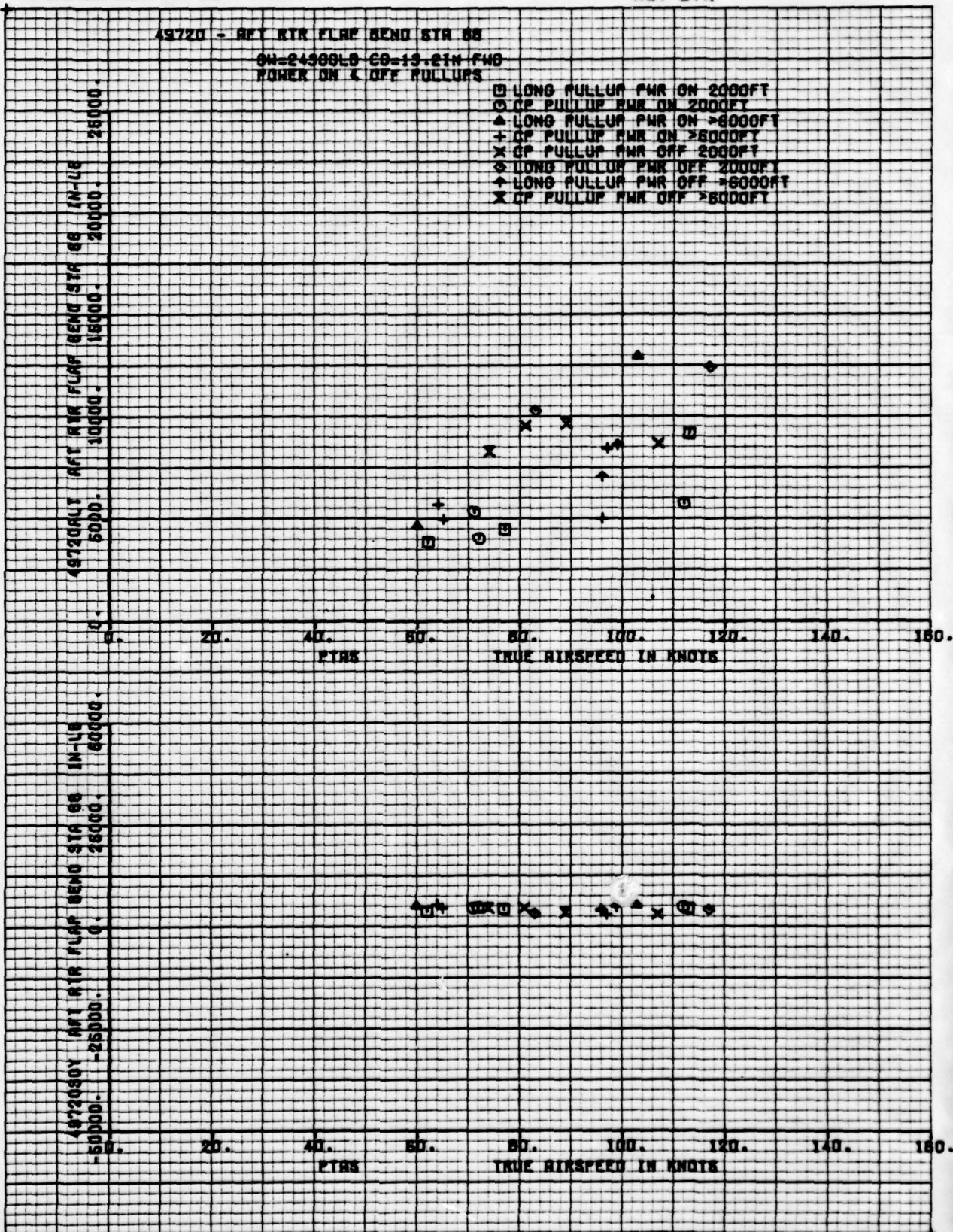


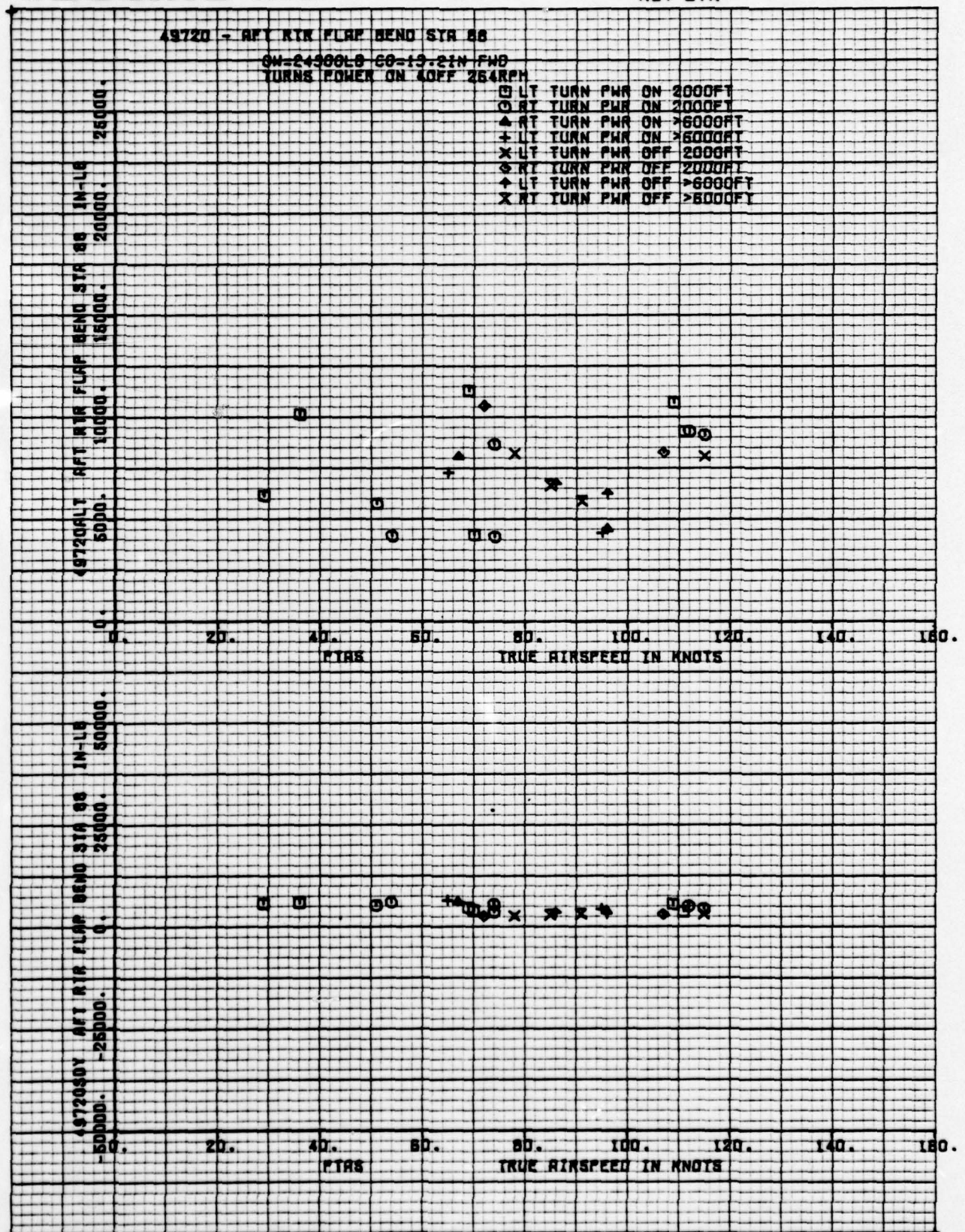


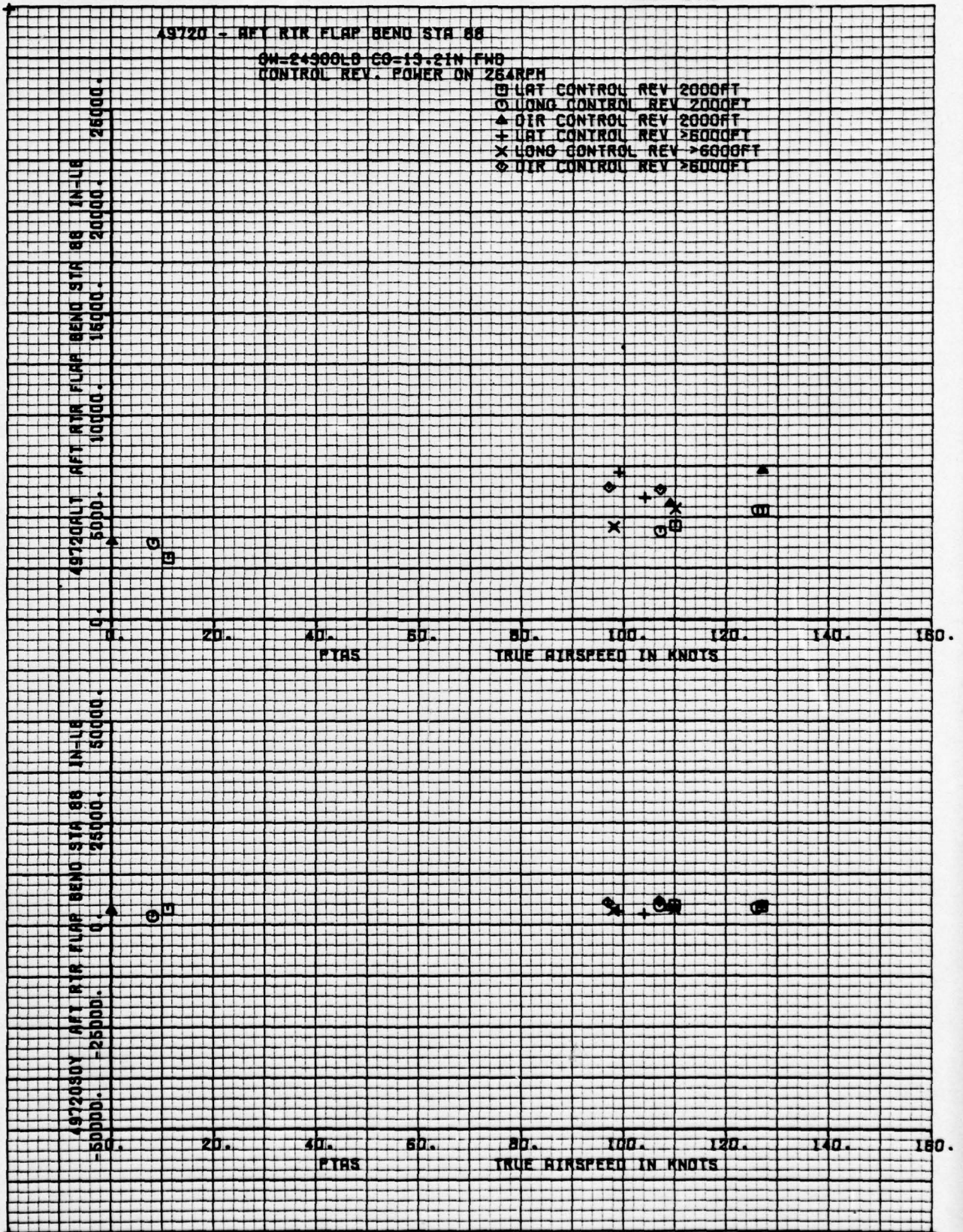
THE **BOEING** COMPANY

D210-11168-3
NUMBER 1 VOLUME 4
REV LTR



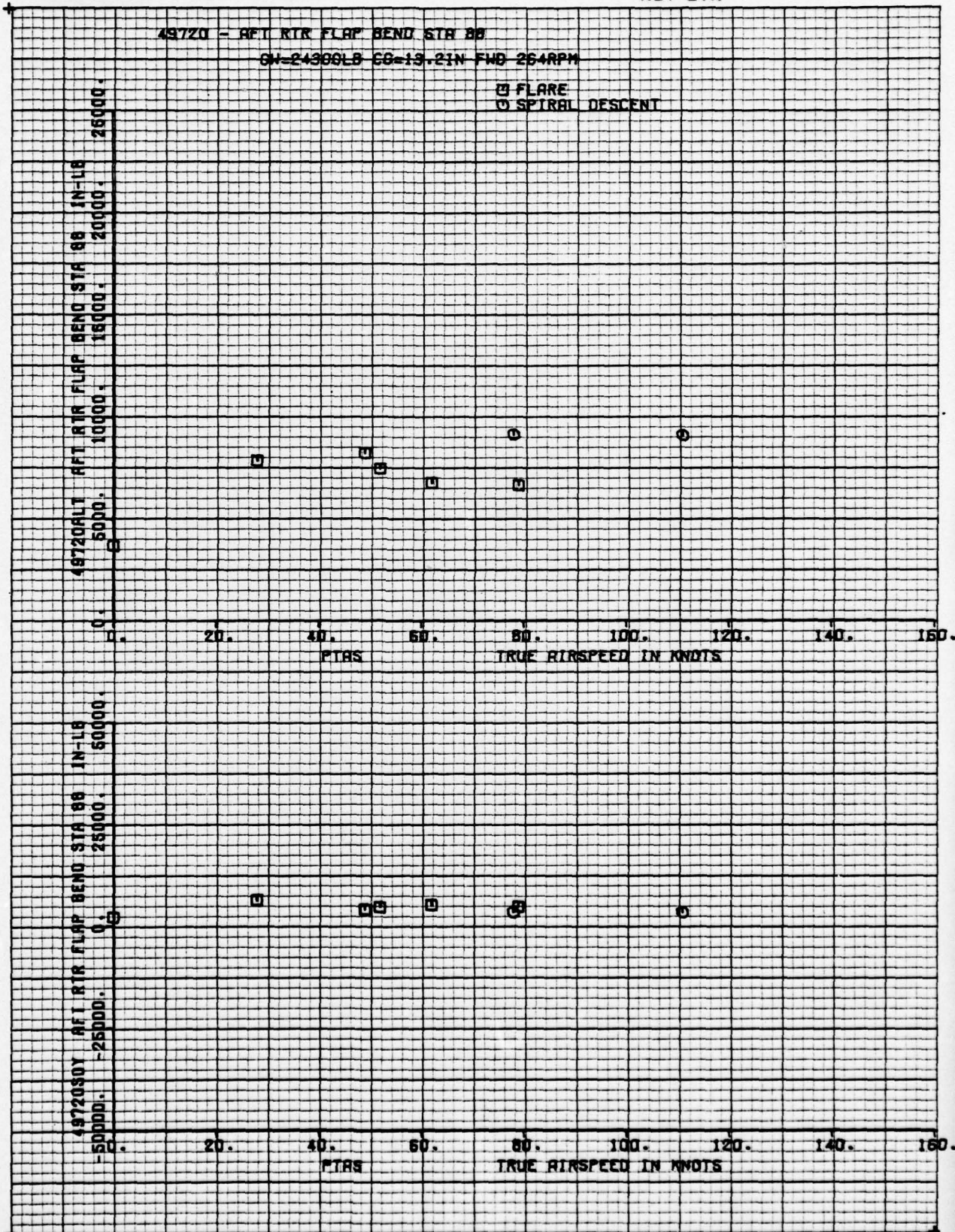


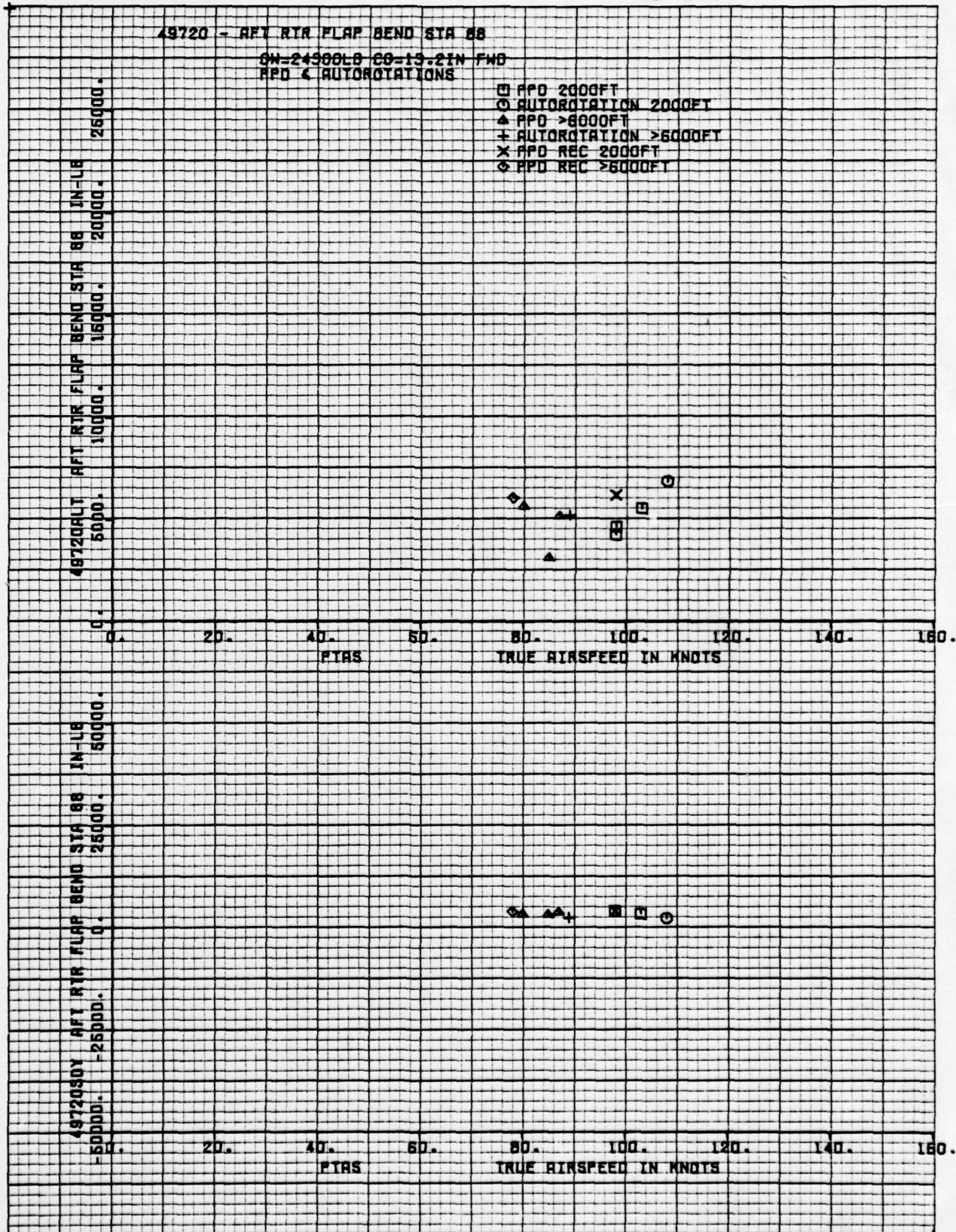


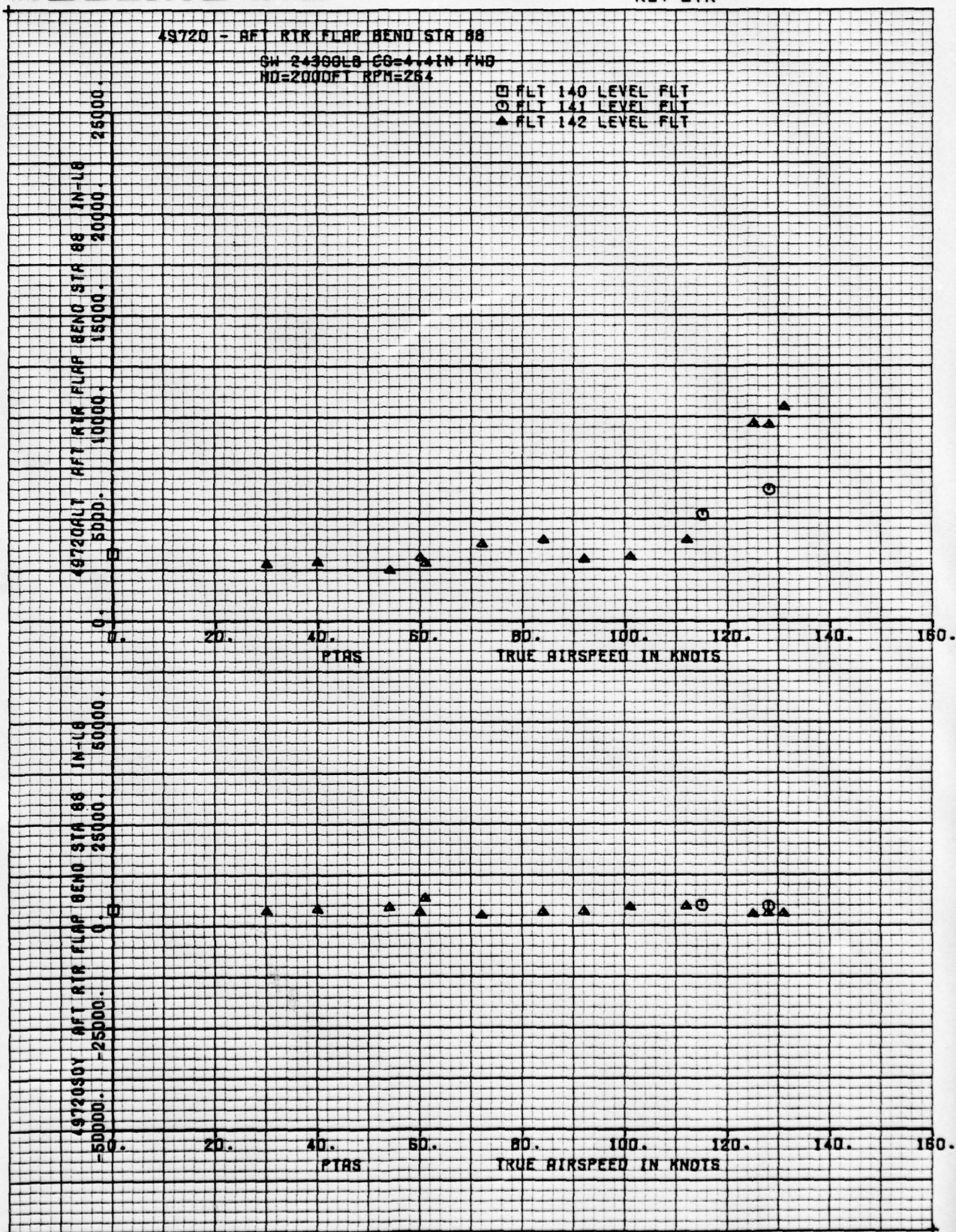


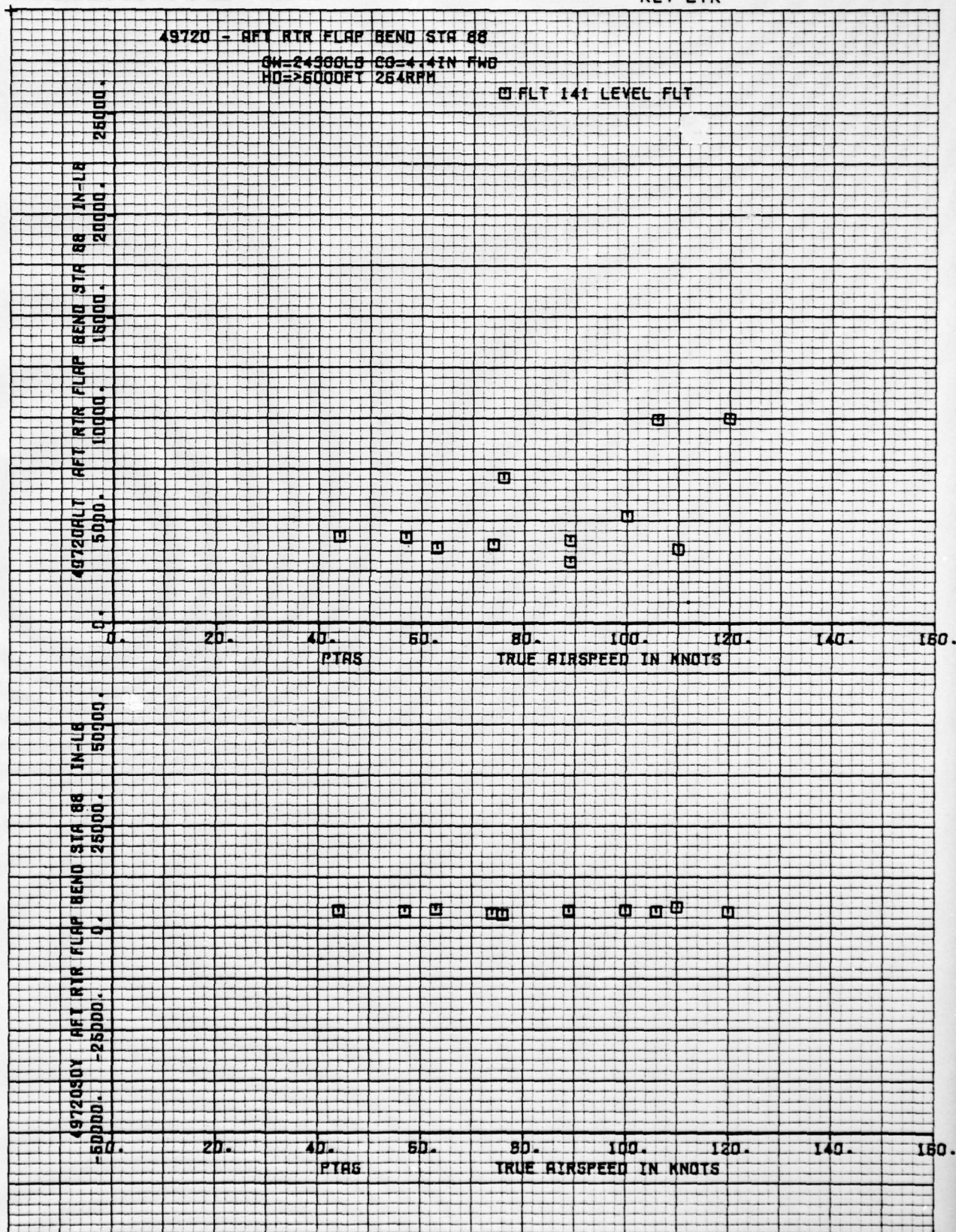
THE **BOEING** COMPANY

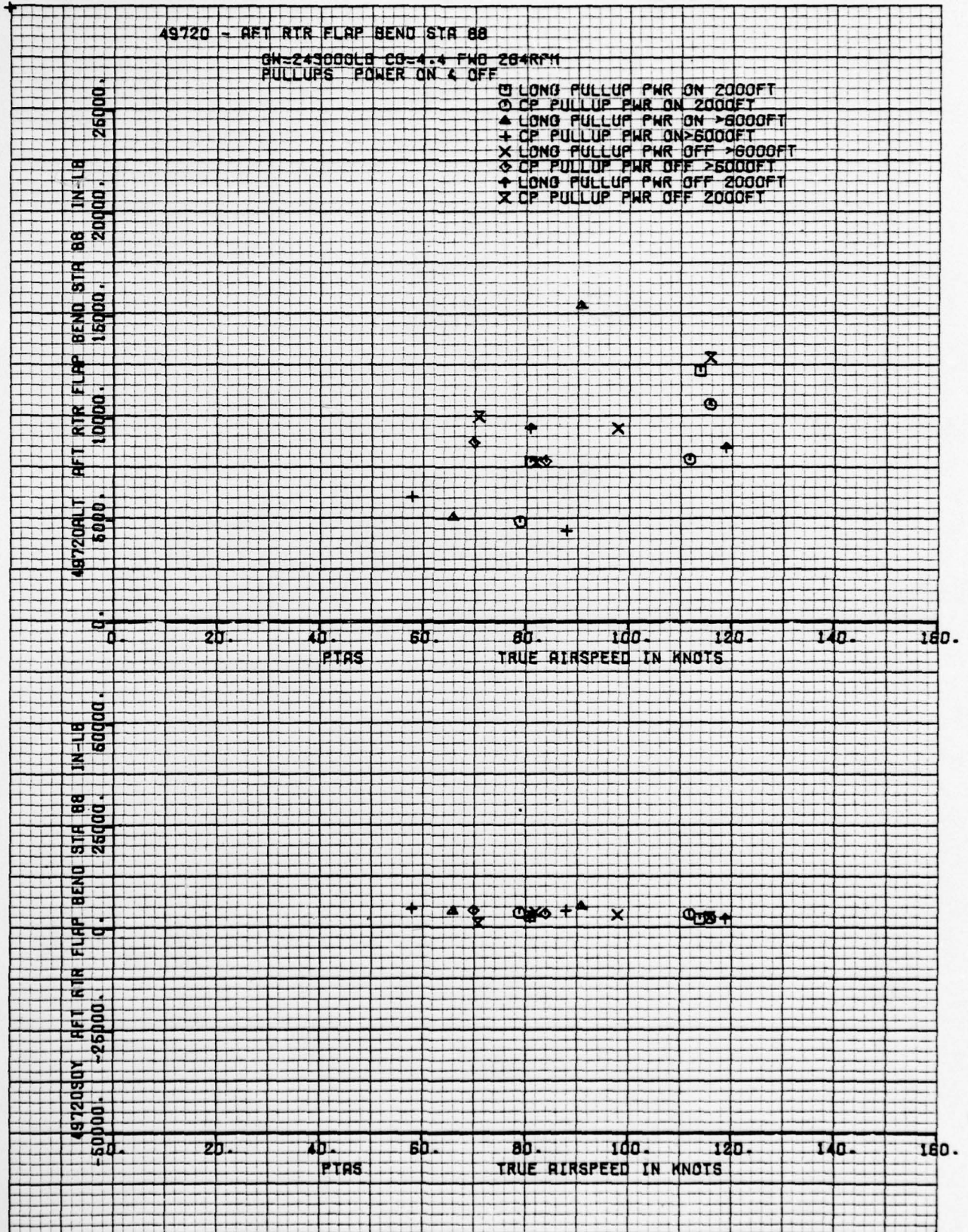
D210-11168-3
NUMBER 1
REV LTR VOLUME 4

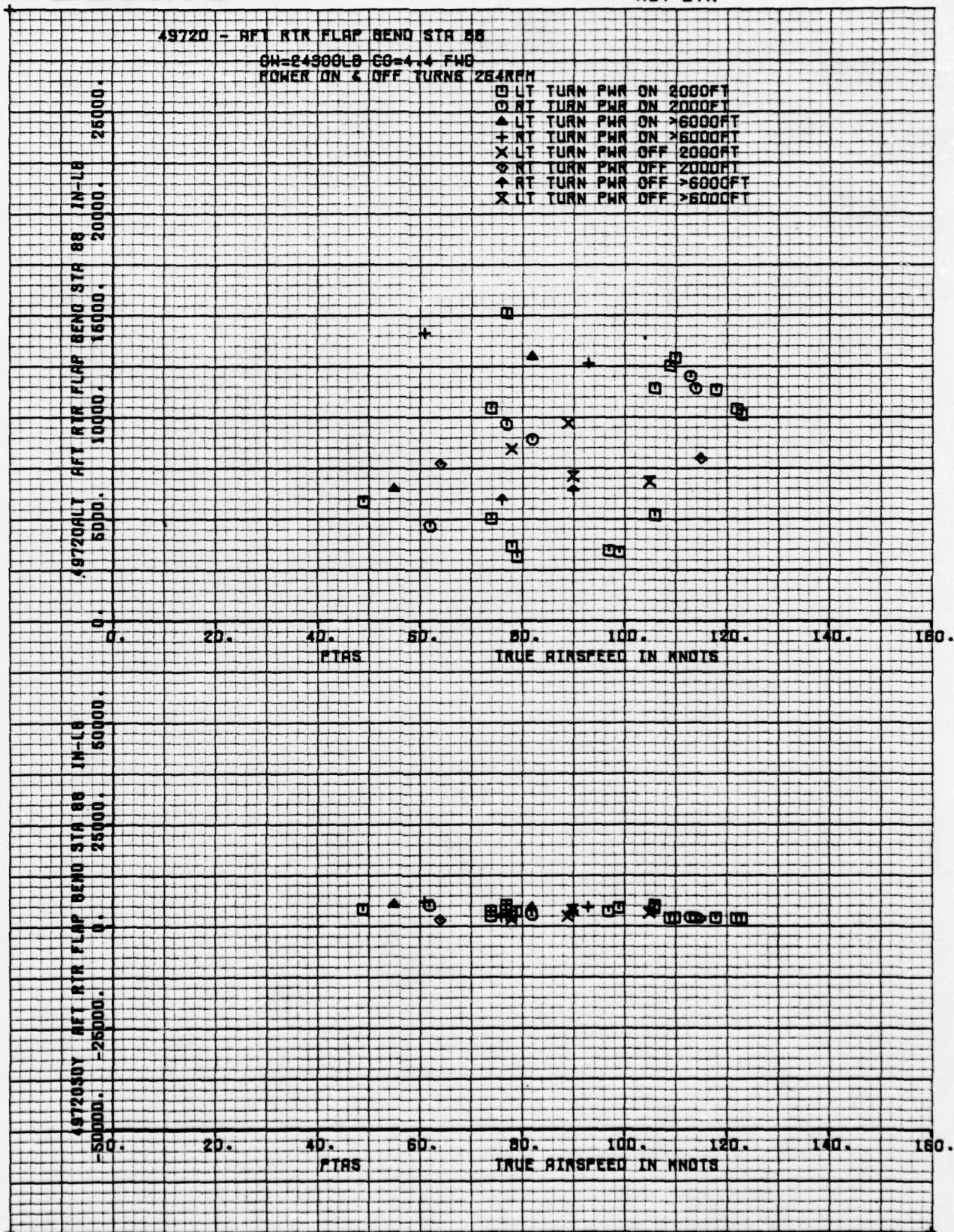






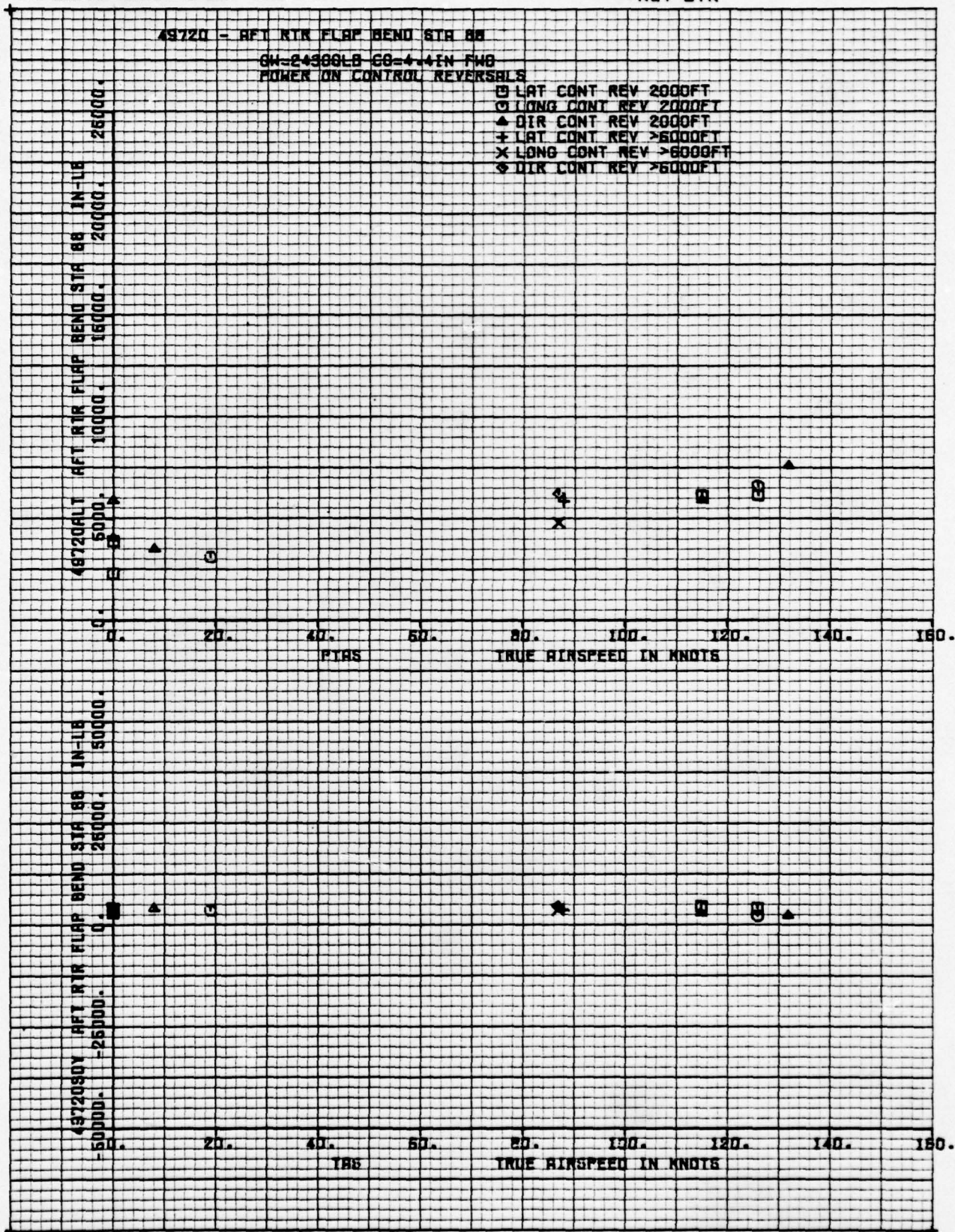






THE **BOEING** COMPANY

D210-11168-3
NUMBER **VOLUME 4**
REV LTR

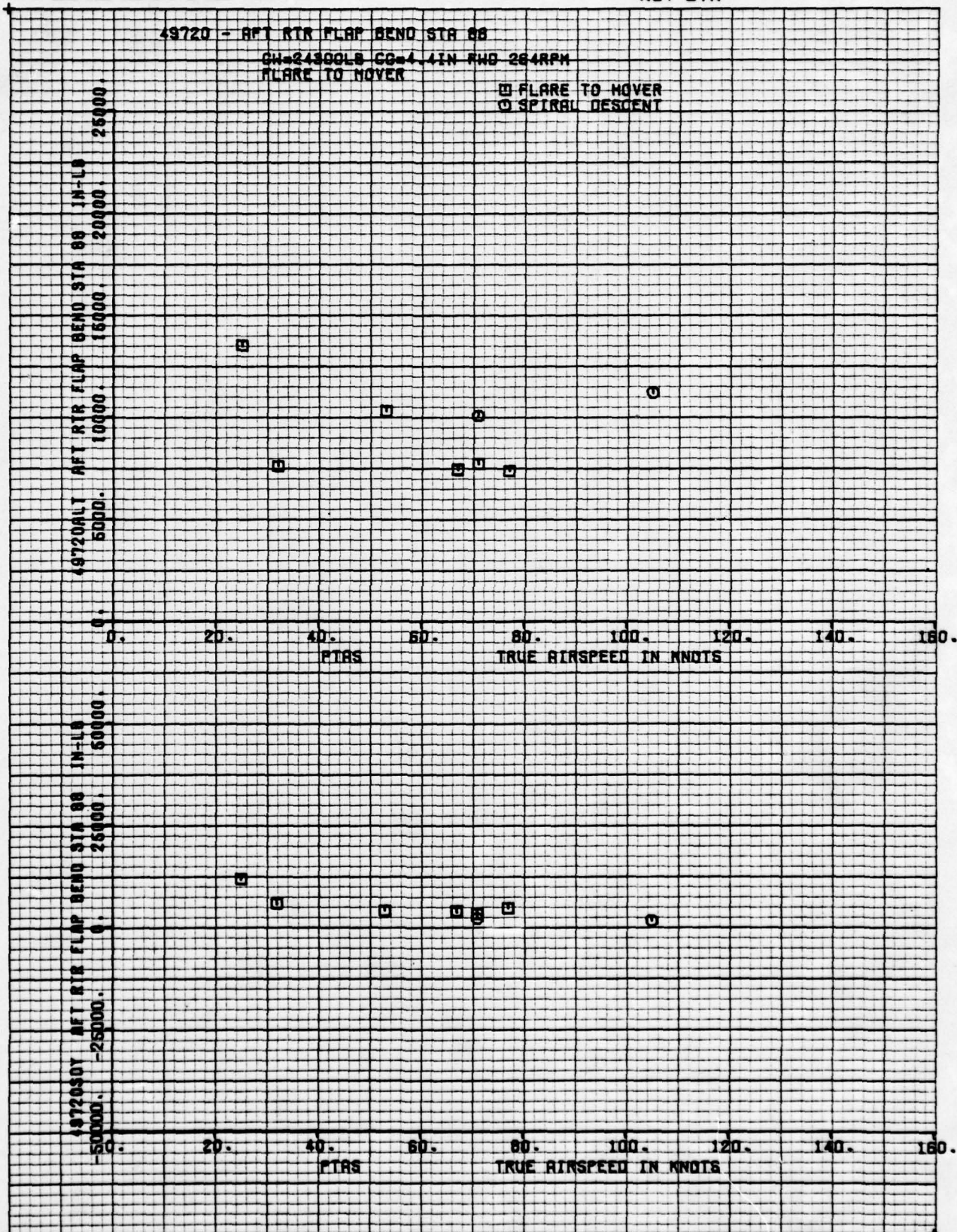


FORM 52300 (10/71)

THE **BOEING** COMPANY

NUMBER
REV LTR

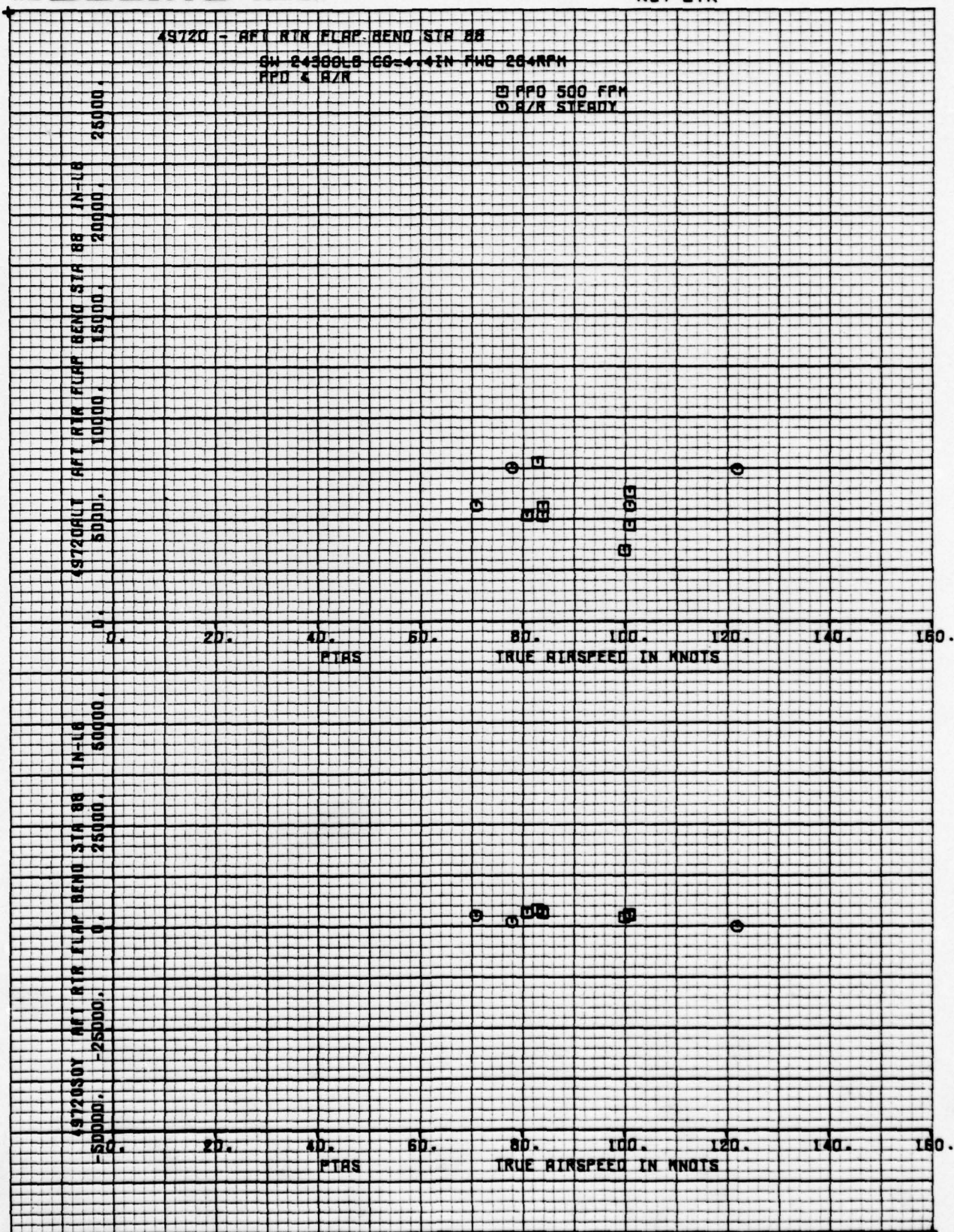
D210-11168-3
VOLUME 4

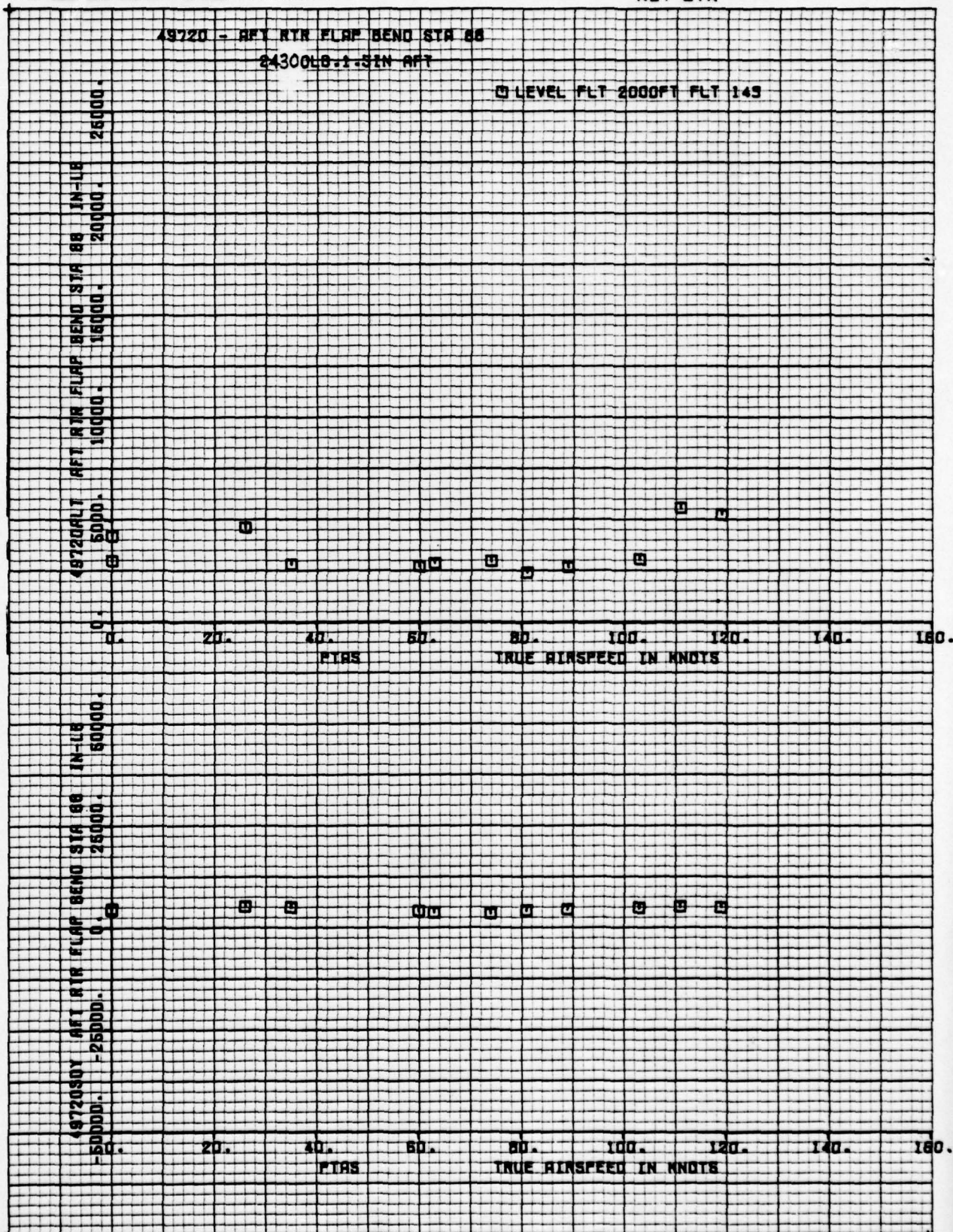


FORM 52300 (10/71)

SHEET 221

-26



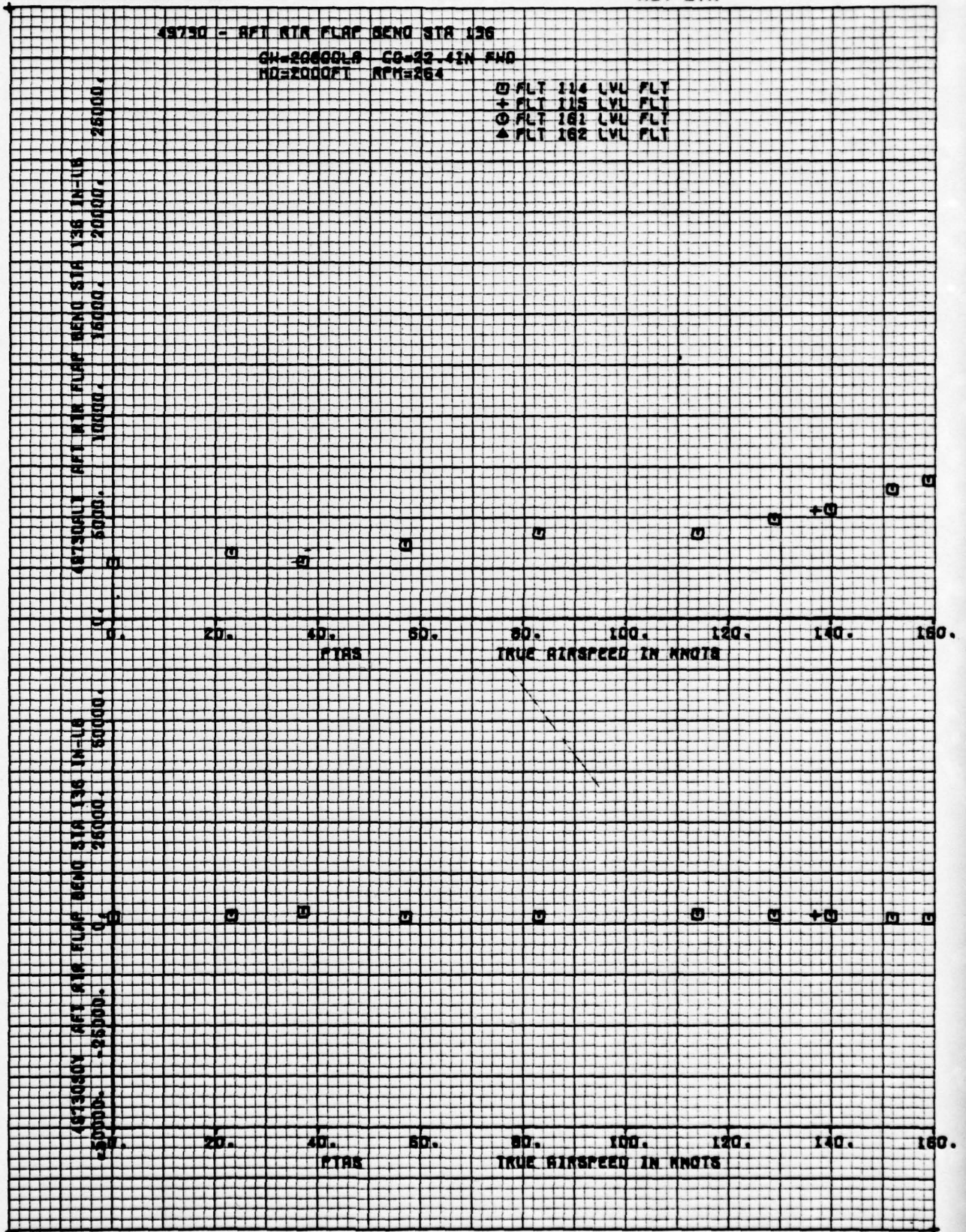


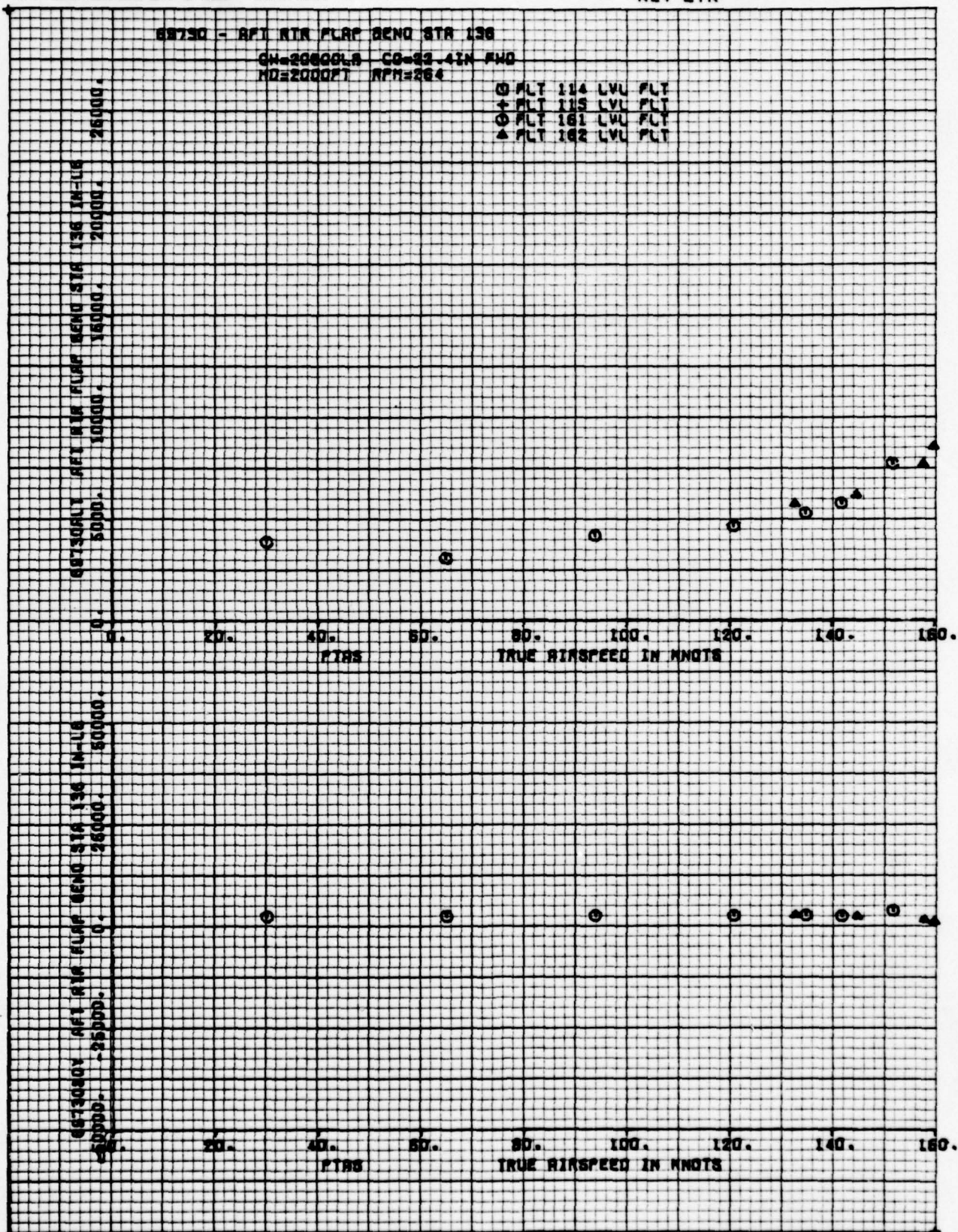
THE **BOEING** COMPANY

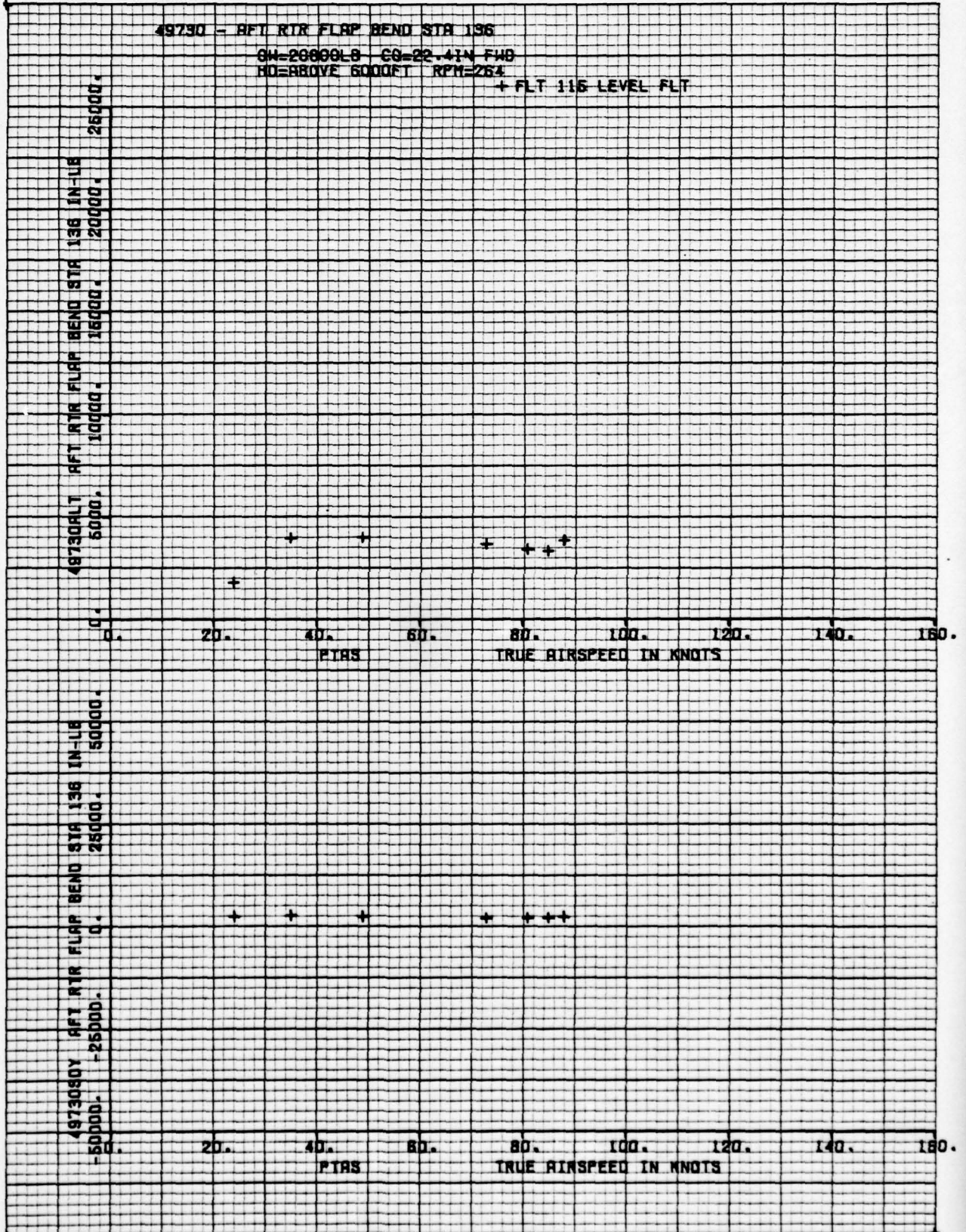
PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/28/78

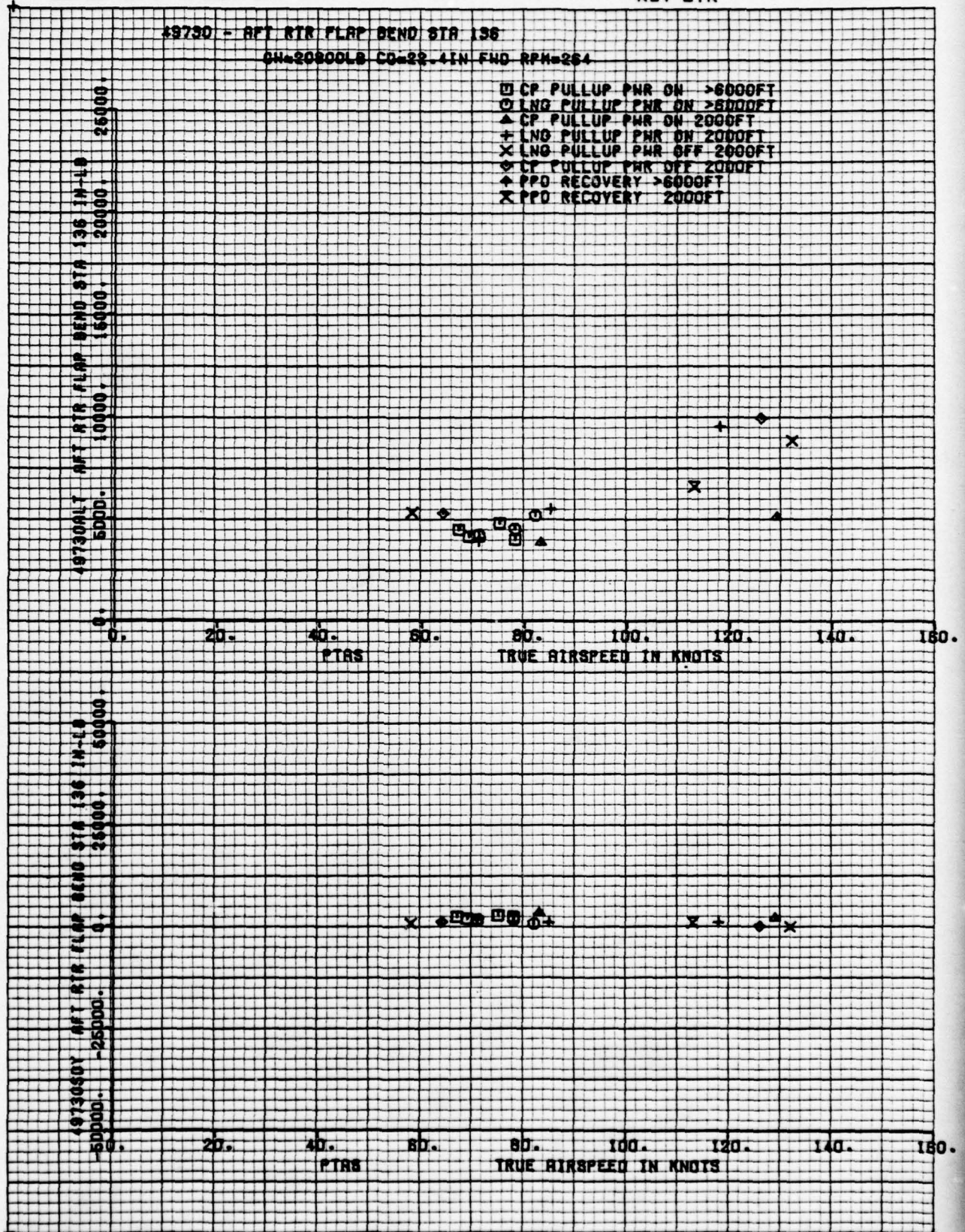
NUMBER D210-11168-3
REV LTR Volume 4
MODEL NO.

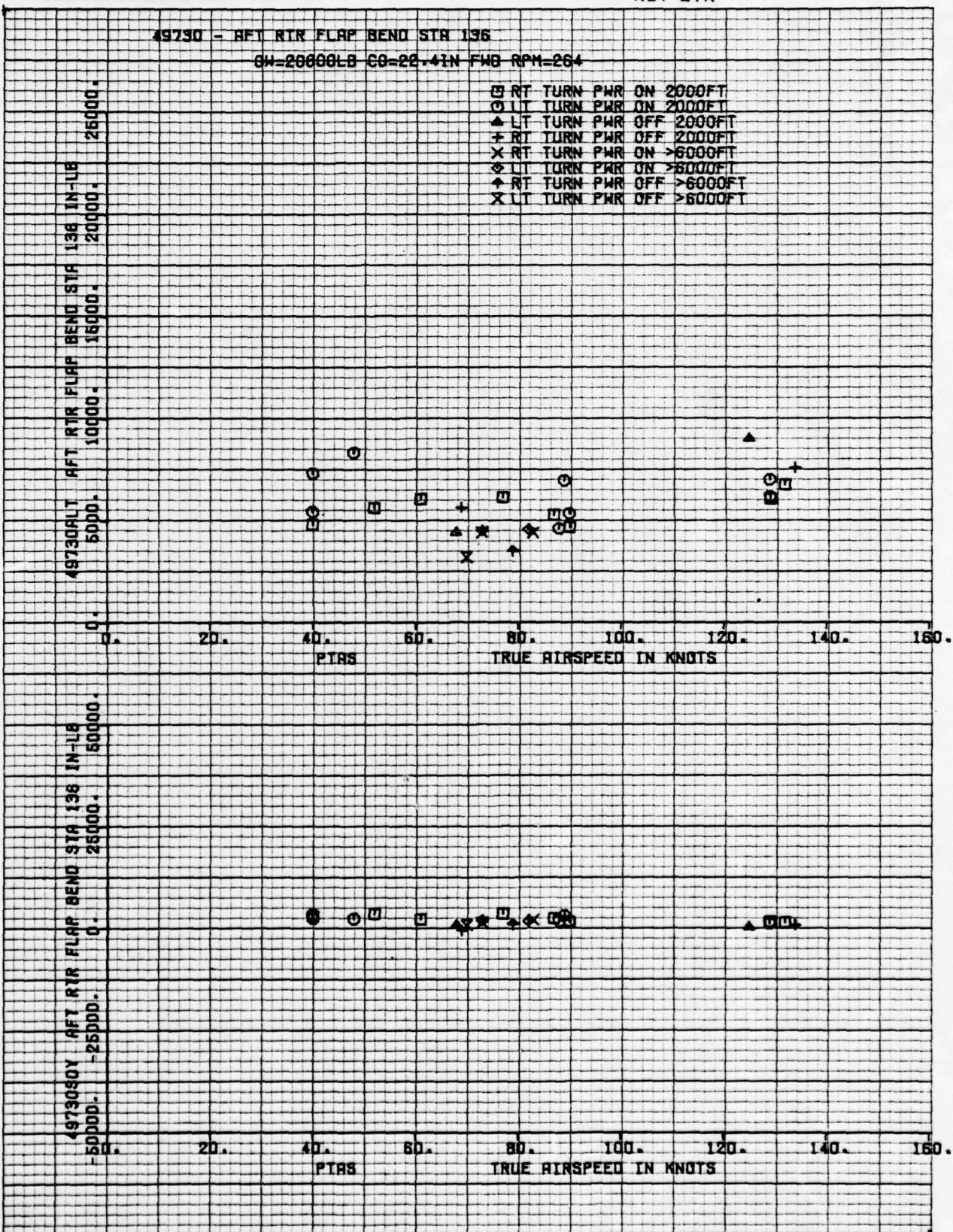
4.7 Aft Blade Flap Bending Station 136.

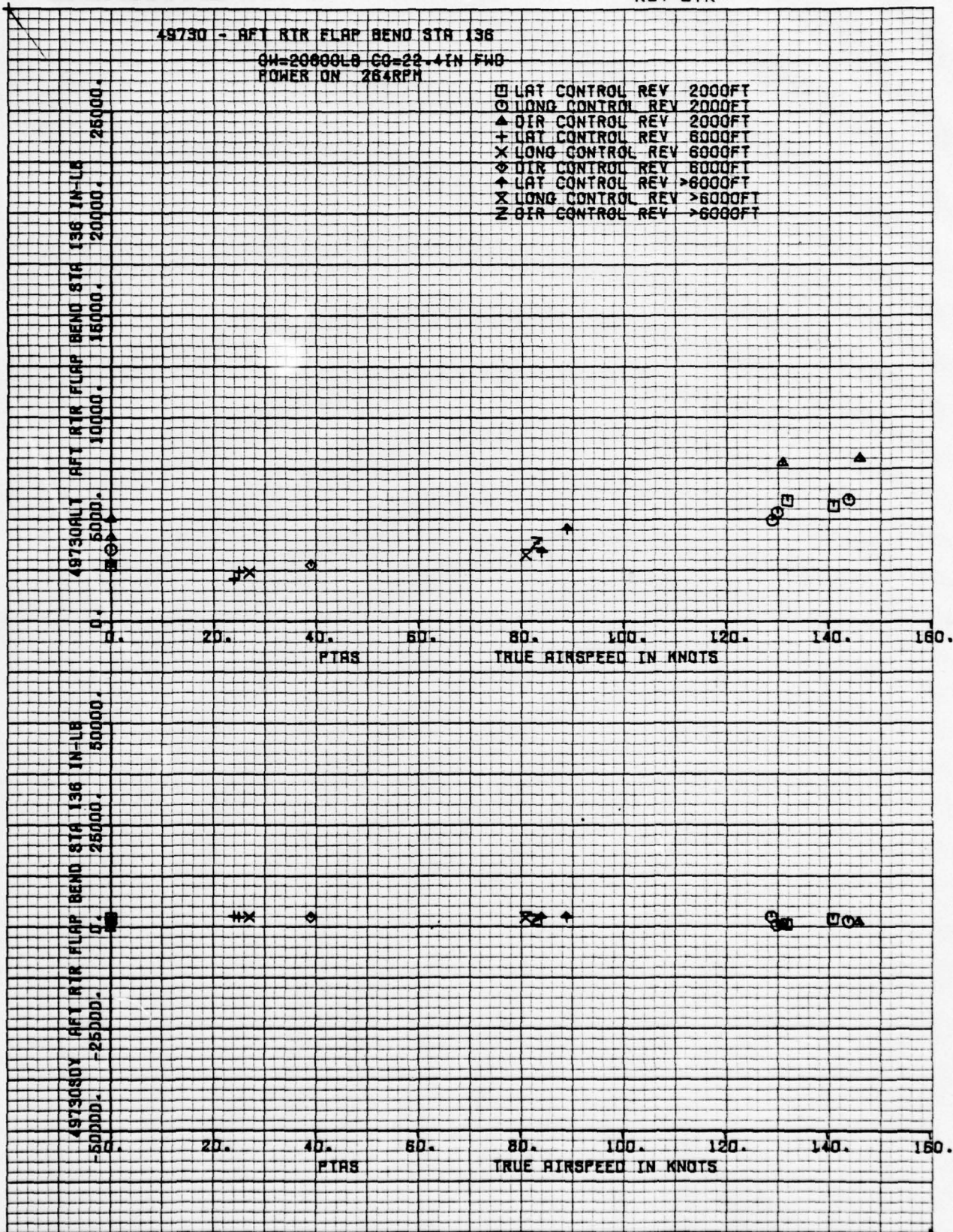






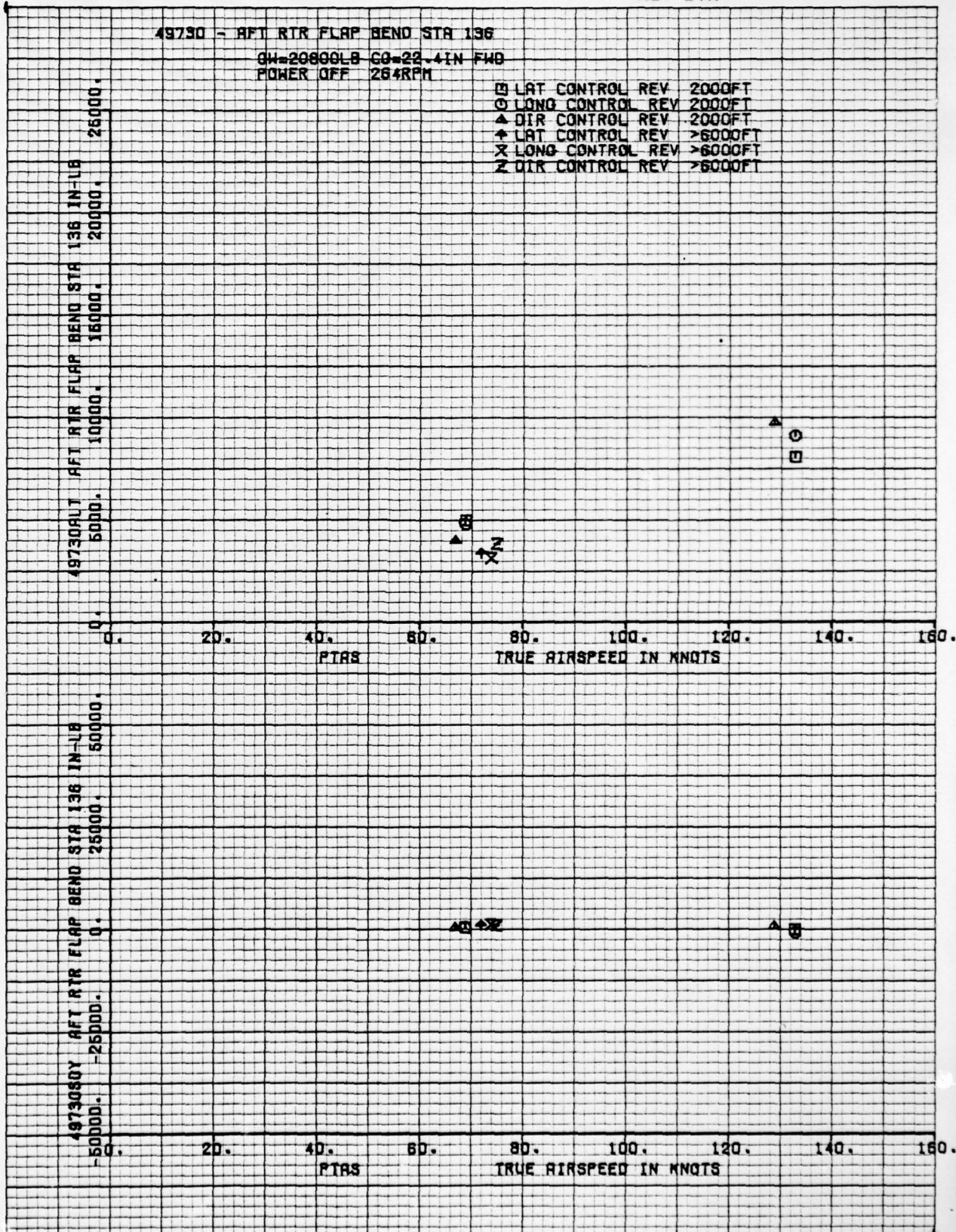






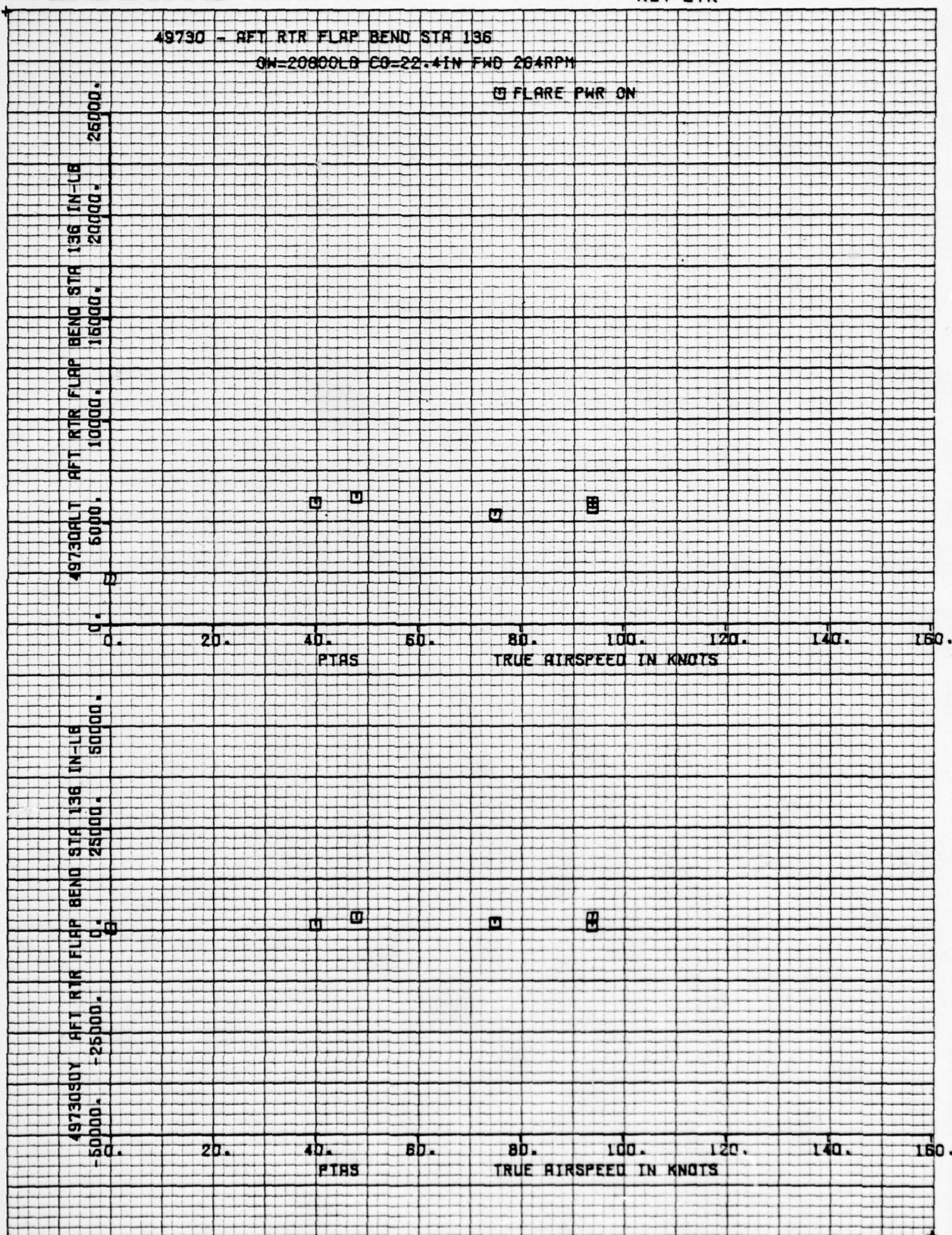
THE **BOEING** COMPANY

NUMBER **D210-11168-3**
REV LTR **VOLUME 4**



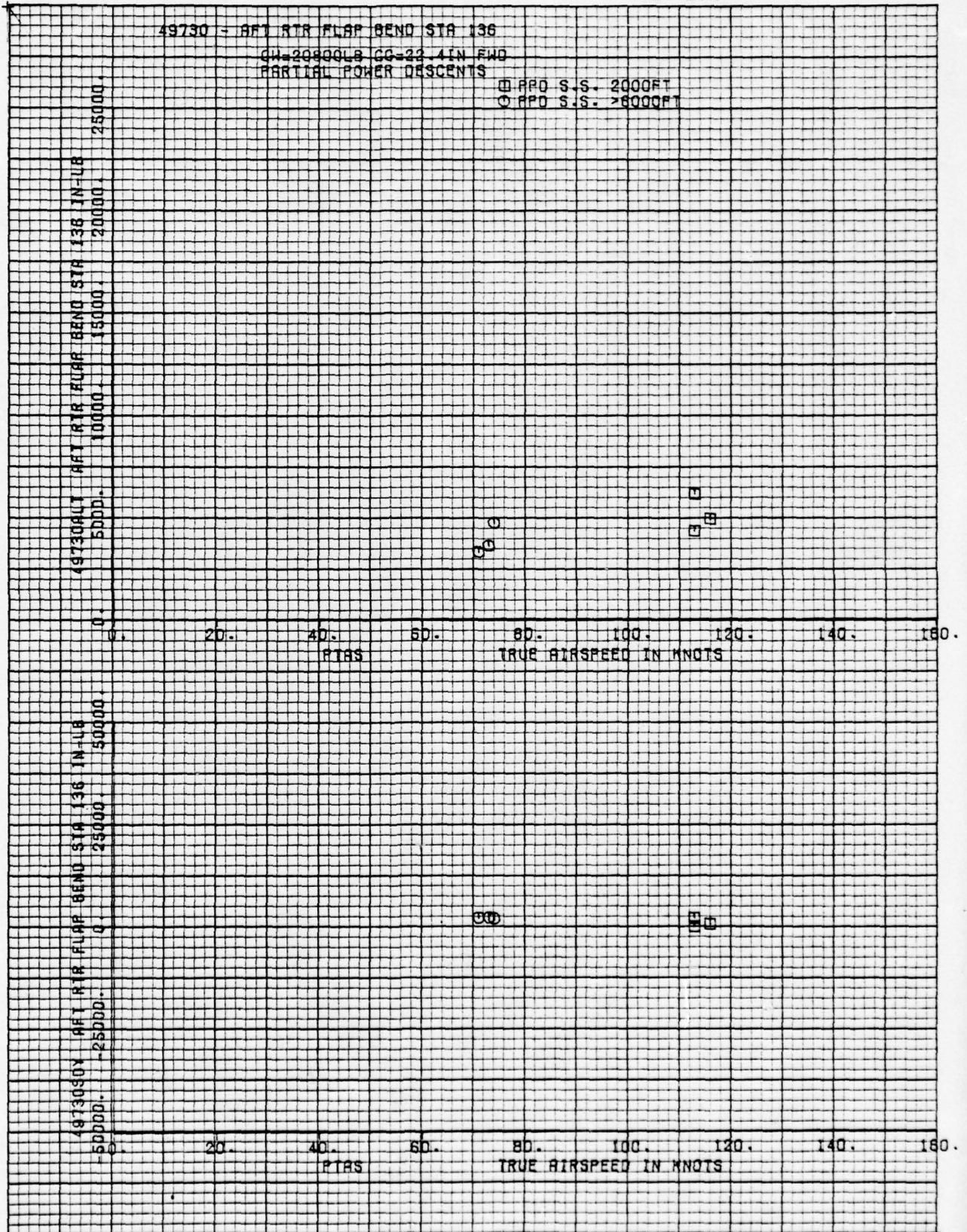
THE **BOEING** COMPANY

D210-11168-3
NUMBER **VOLUME 4**
REV LTR

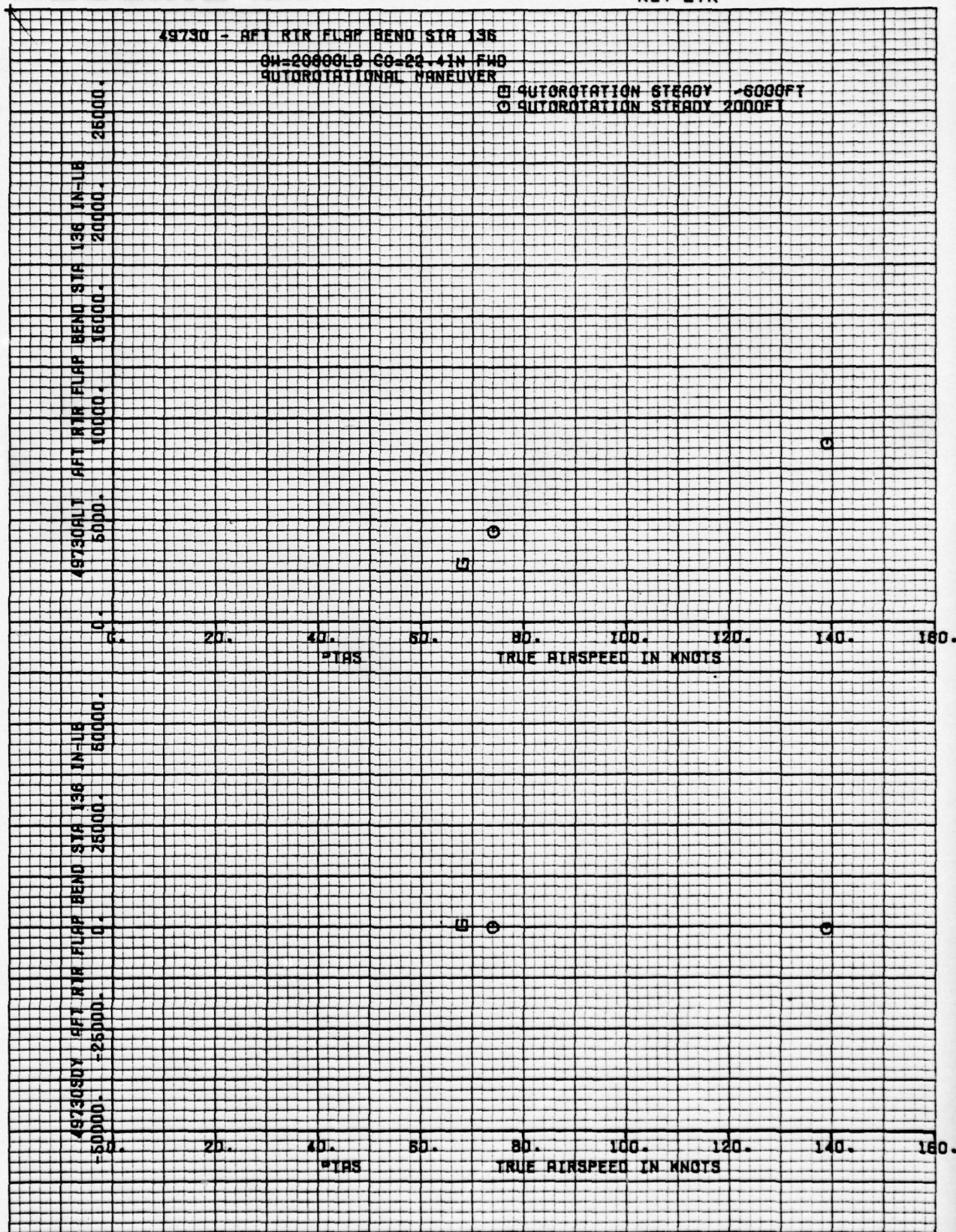


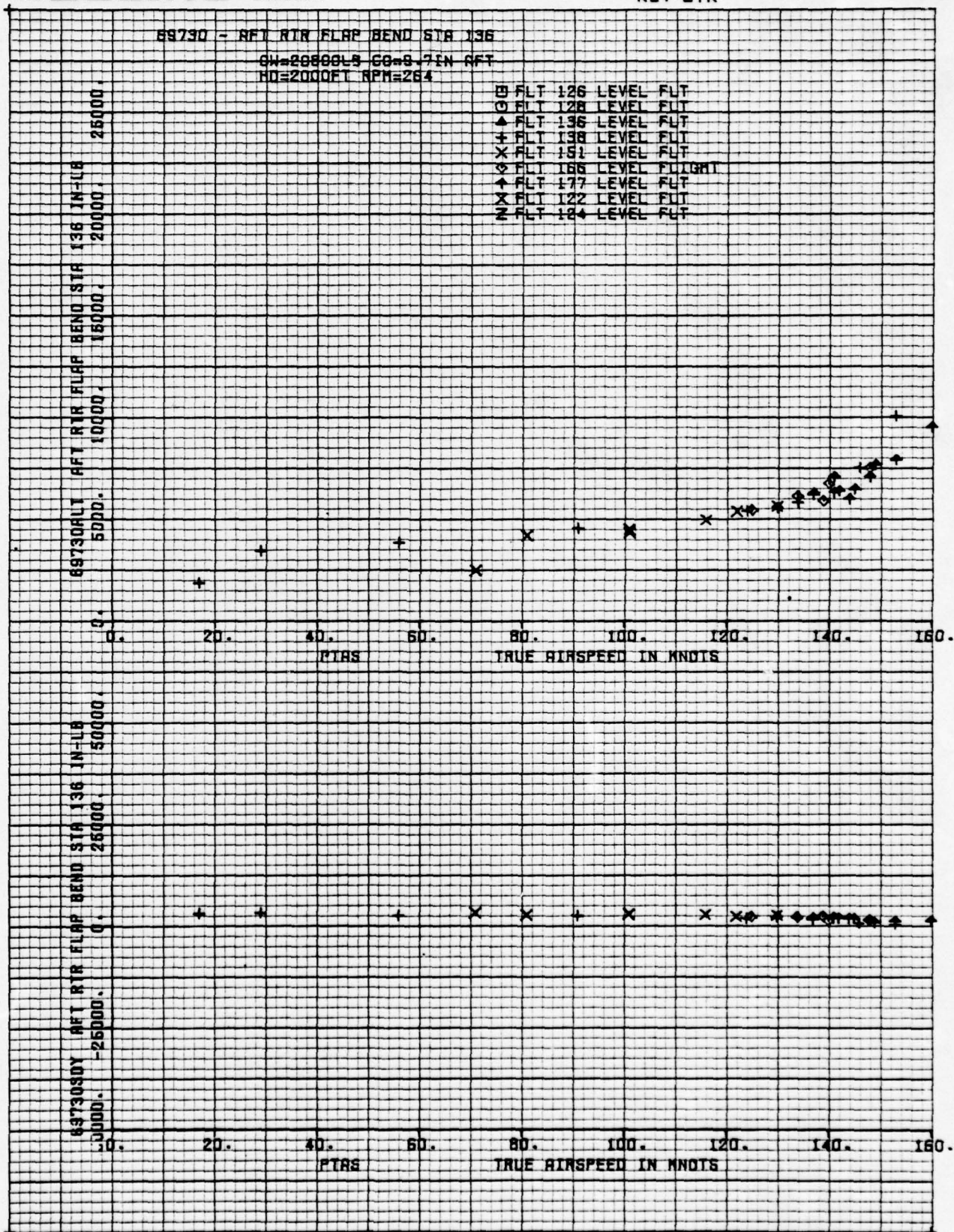
THE **BOEING** COMPANY

D210-11168-3
NUMBER **VOLUME 4**
REV LTR



FORM 52300 (10/71)

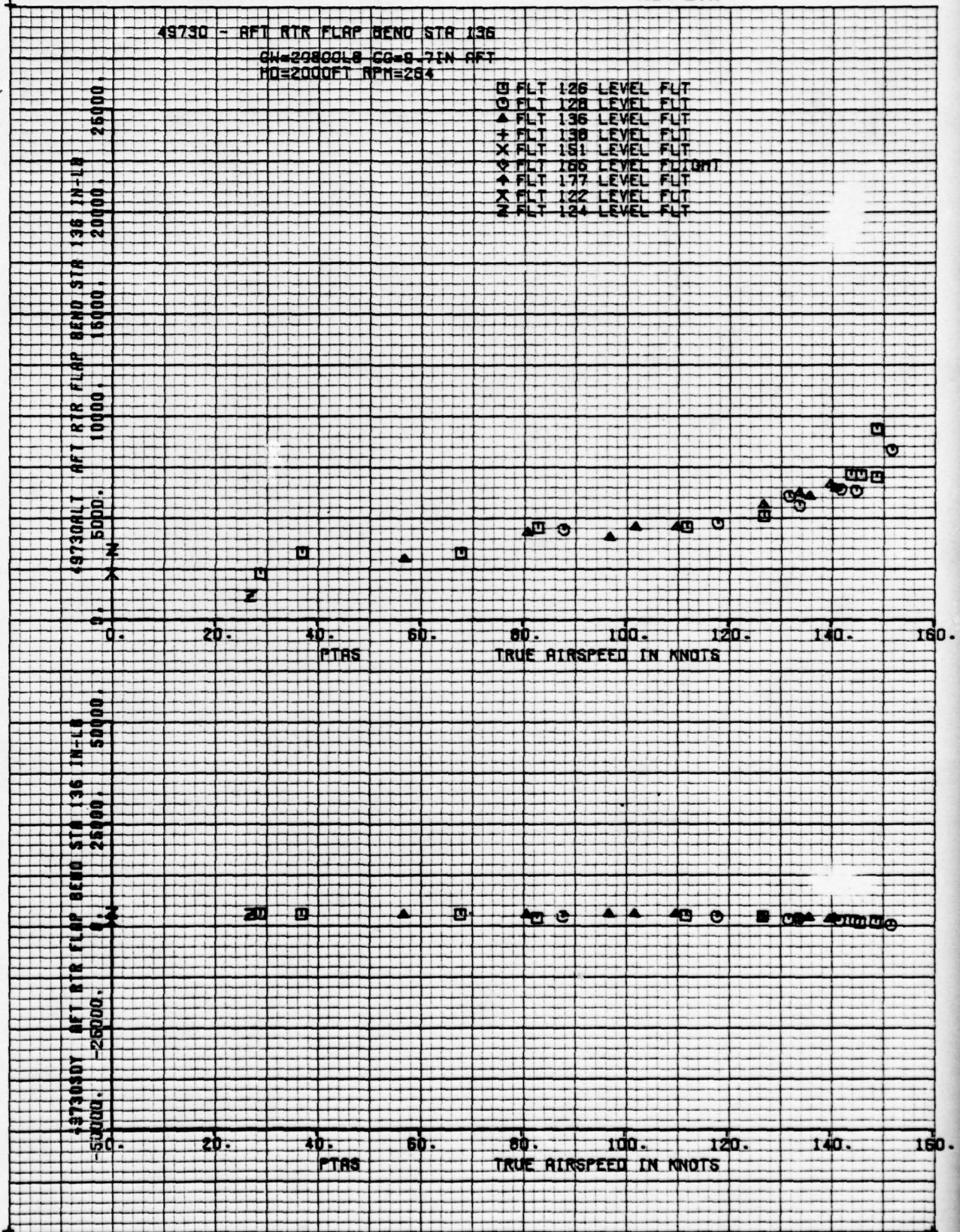




THE **BOEING** COMPANY

NUMBER
REV LTR

D210-11168-3
VOLUME



FORM 52300 (10/71)

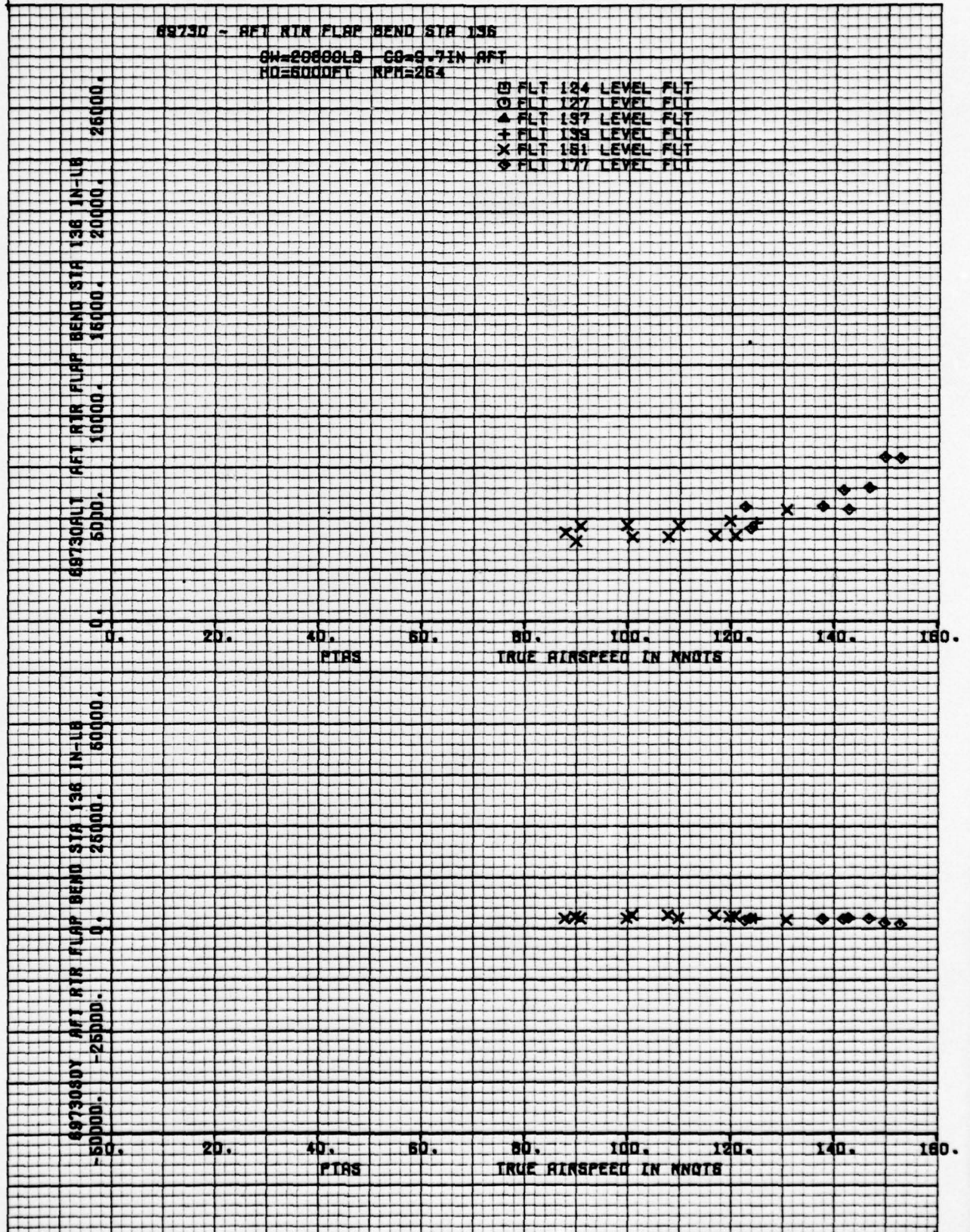
SHEET 236

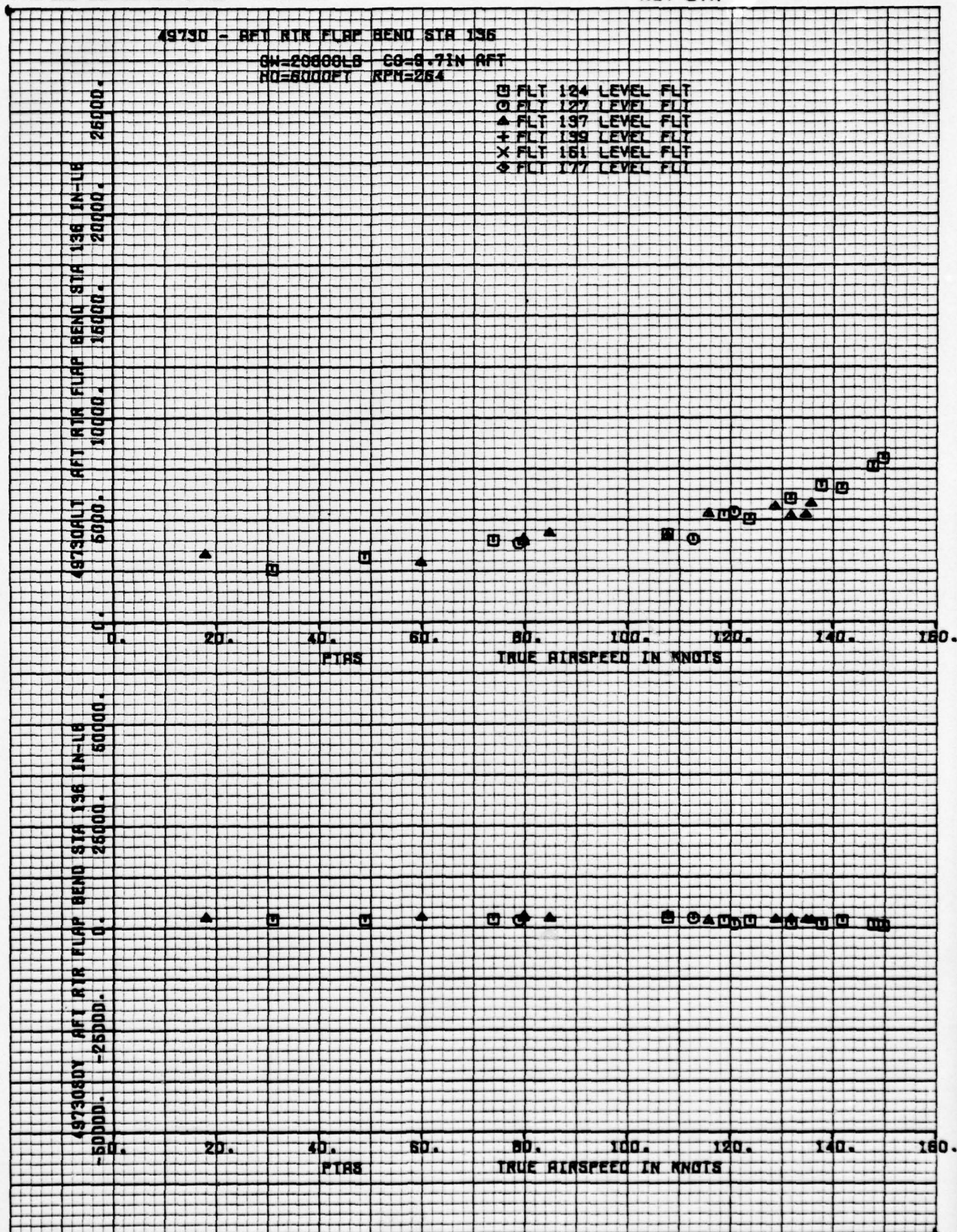
-3

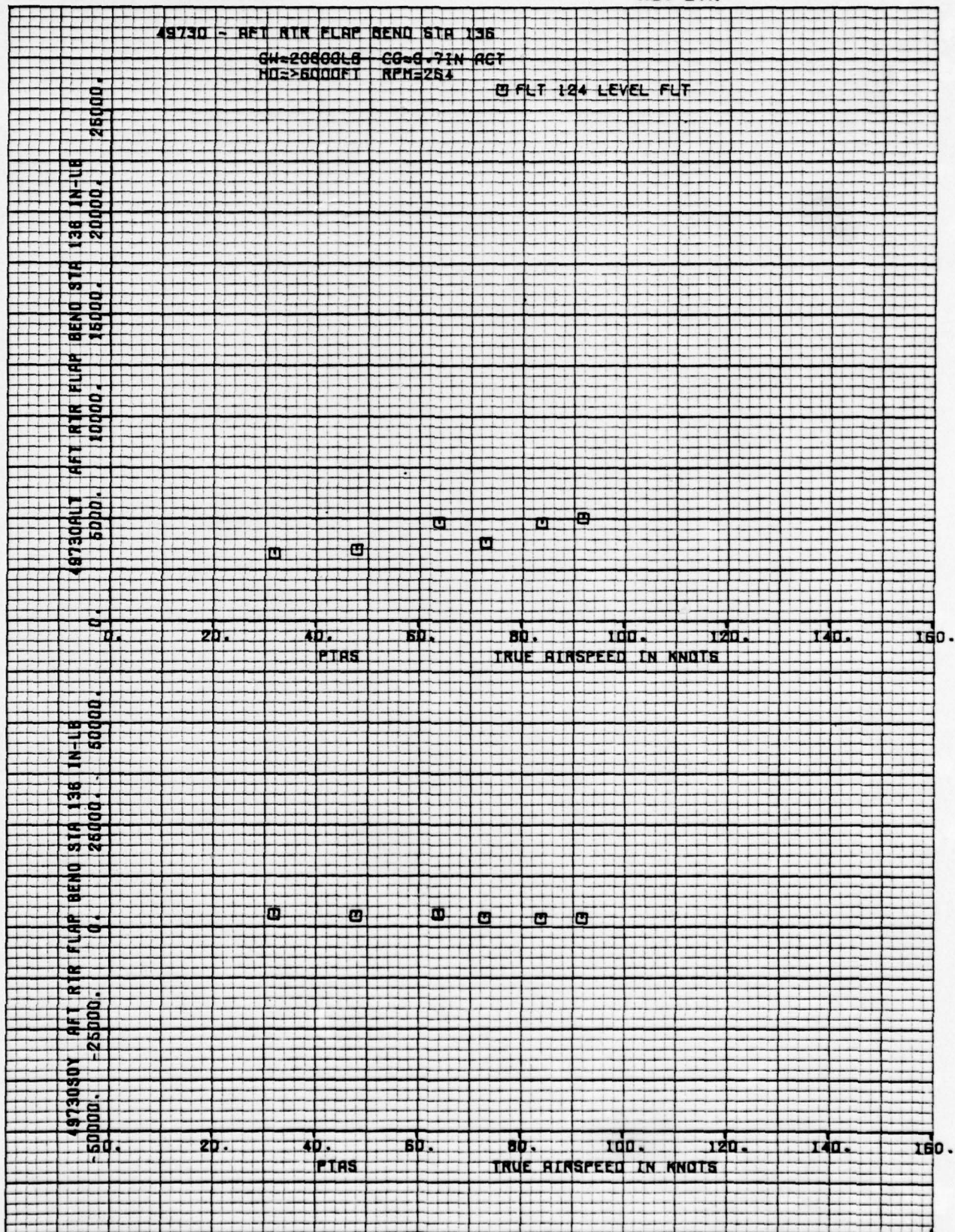
THE **BOEING** COMPANY

NUMBER
REV LTR

D210-11168-3
VOLUME 4



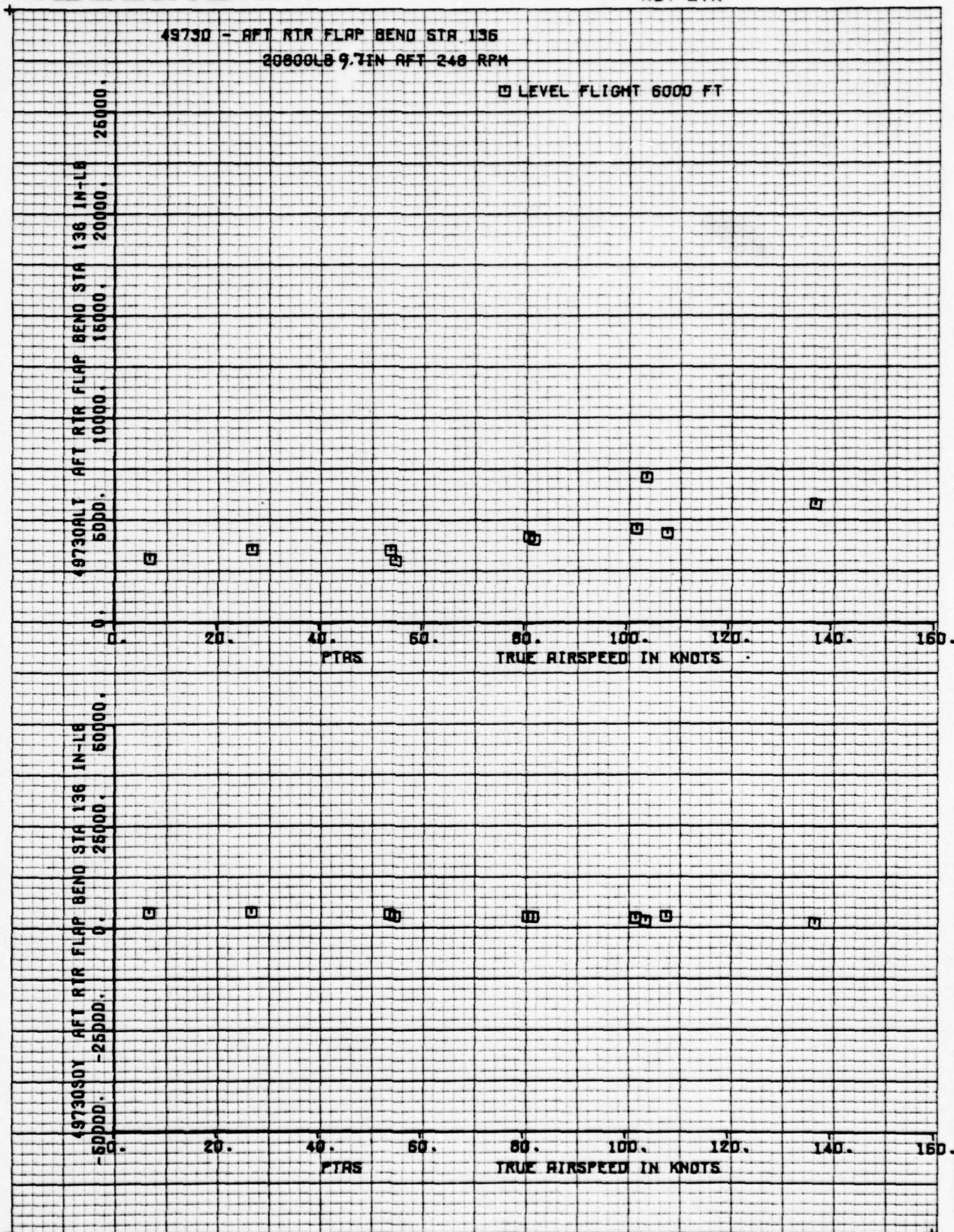




D210-11168-3

NUMBER 77 VOLUME 4
REV LTR

THE **BOEING** COMPANY



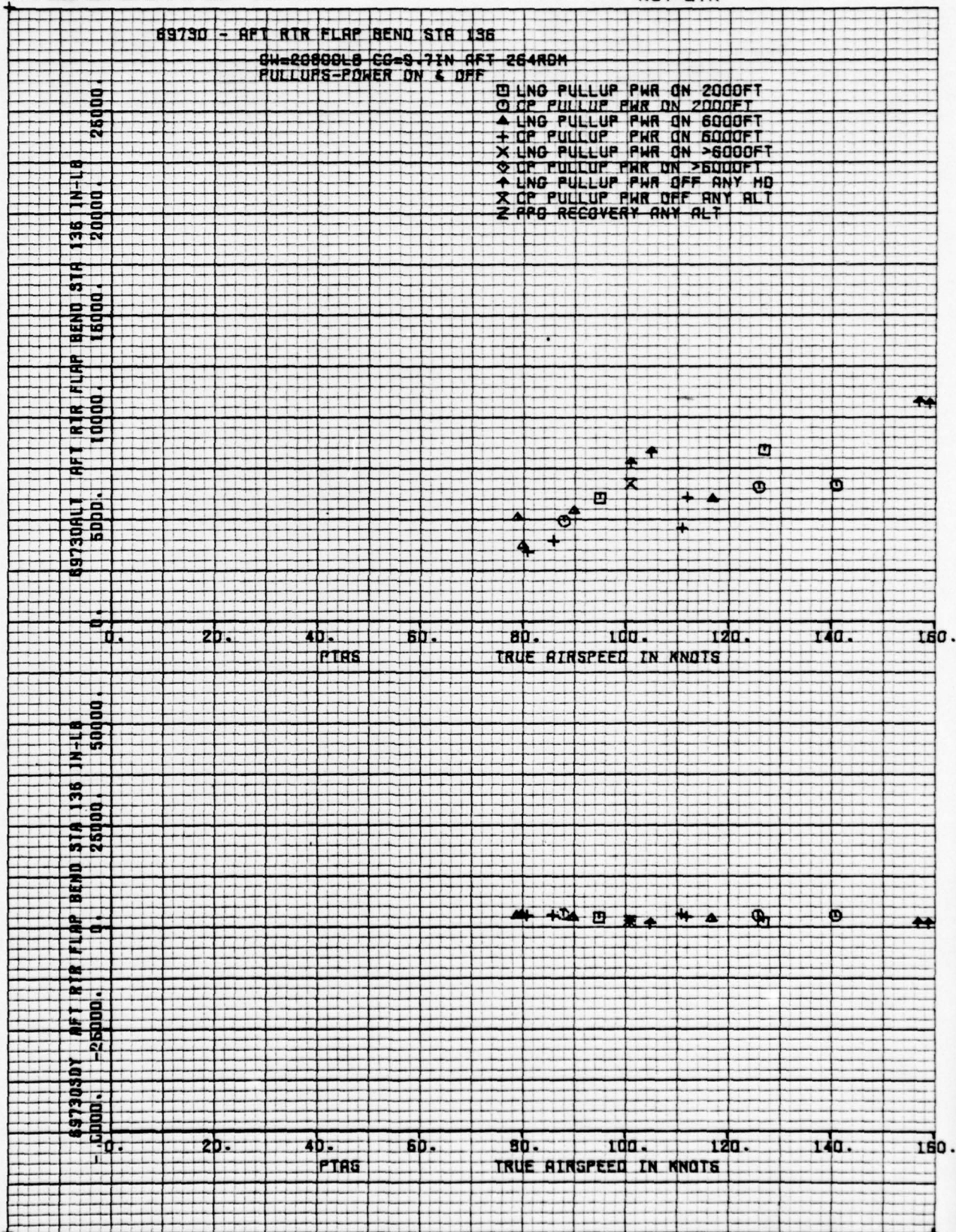
THE **BOEING** COMPANY

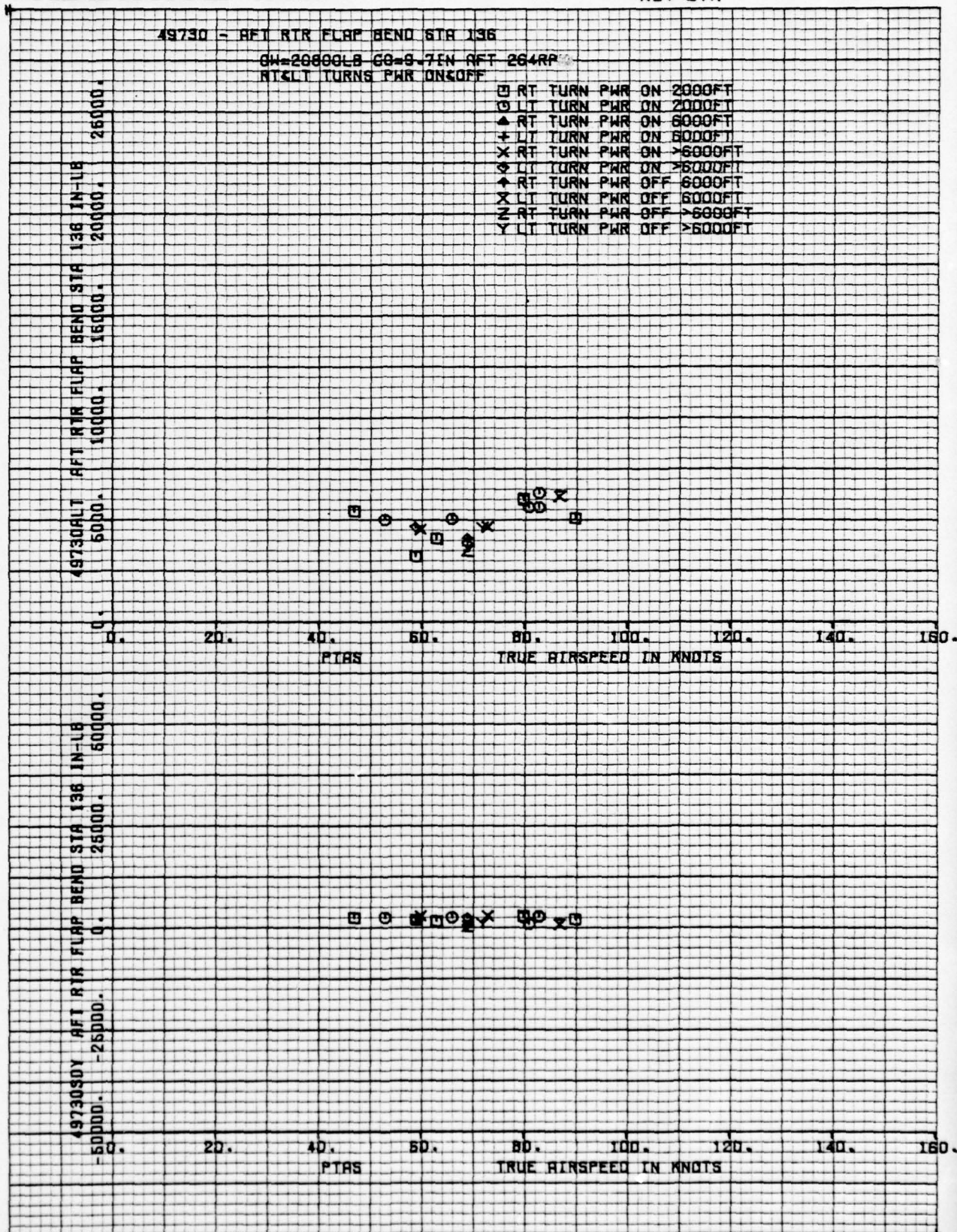
49730 - AFT RTR FLAP BEND STA 136

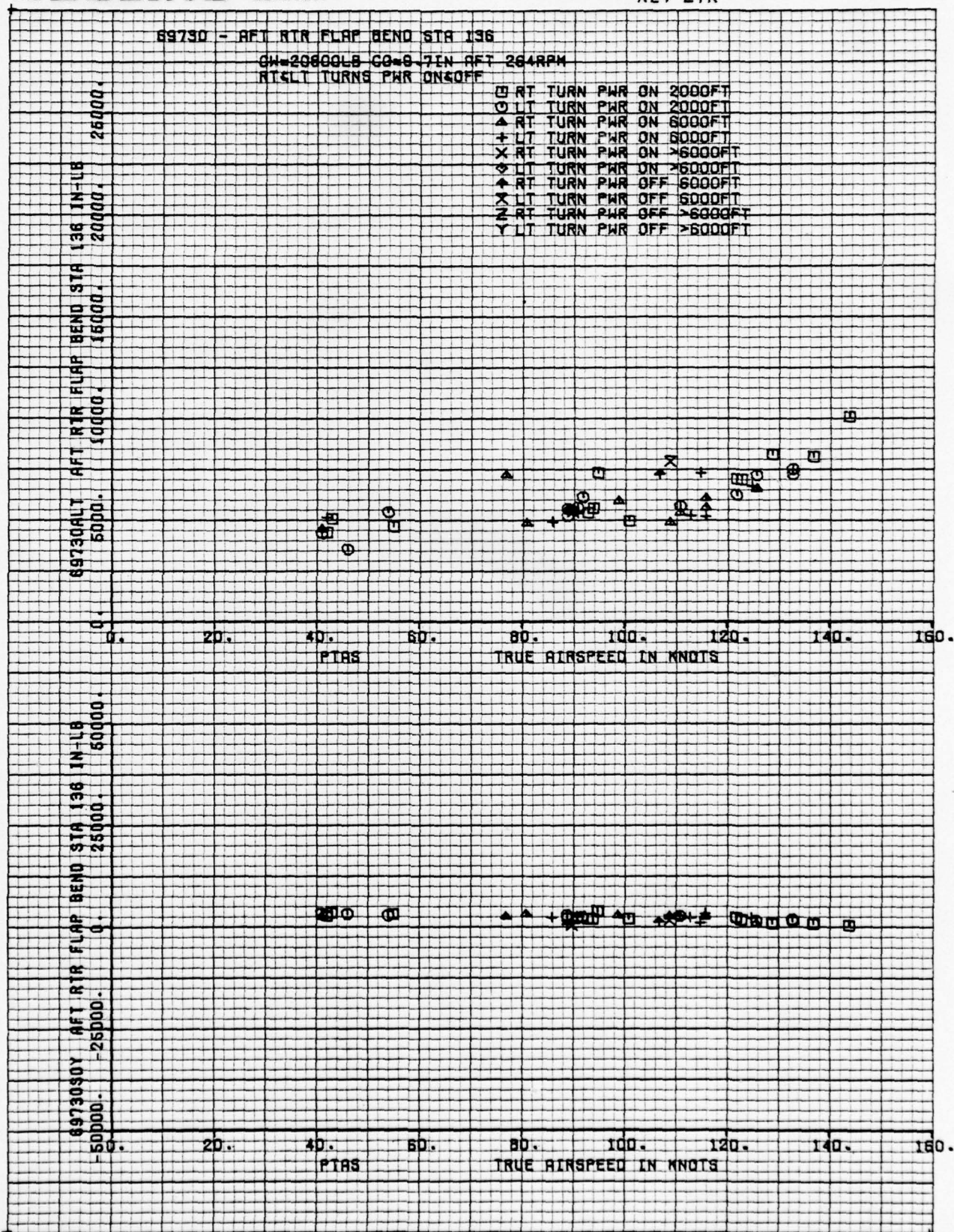
GW=20800LB CG=9.71N AFT 264RDM
PULLUPS-POWER ON & OFF

□ LNG PULLUP PWR ON 2000FT
 ○ CP PULLUP PWR ON 2000FT
 ▲ LNG PULLUP PWR ON 6000FT
 + CP PULLUP PWR ON 6000FT
 X LNG PULLUP PWR ON >6000FT
 ◇ CP PULLUP PWR ON >6000FT
 ◆ LNG PULLUP PWR OFF ANY ALT
 X CP PULLUP PWR OFF ANY ALT
 Z APO RECOVERY ANY ALT

49730ALI AFT RTR FLAP BEND STA 136 IN-LB
26000.
20000.
16000.
12000.
8000.
4000.
0.49730SDY AFT RTR FLAP BEND STA 136 IN-LB
50000.
40000.
30000.
20000.
10000.
0.0. 20. 40. 60. 80. 100. 120. 140. 160.
PTAS TRUE AIRSPEED IN KNOTS0. 20. 40. 60. 80. 100. 120. 140. 160.
TAG TRUE AIRSPEED IN KNOTS







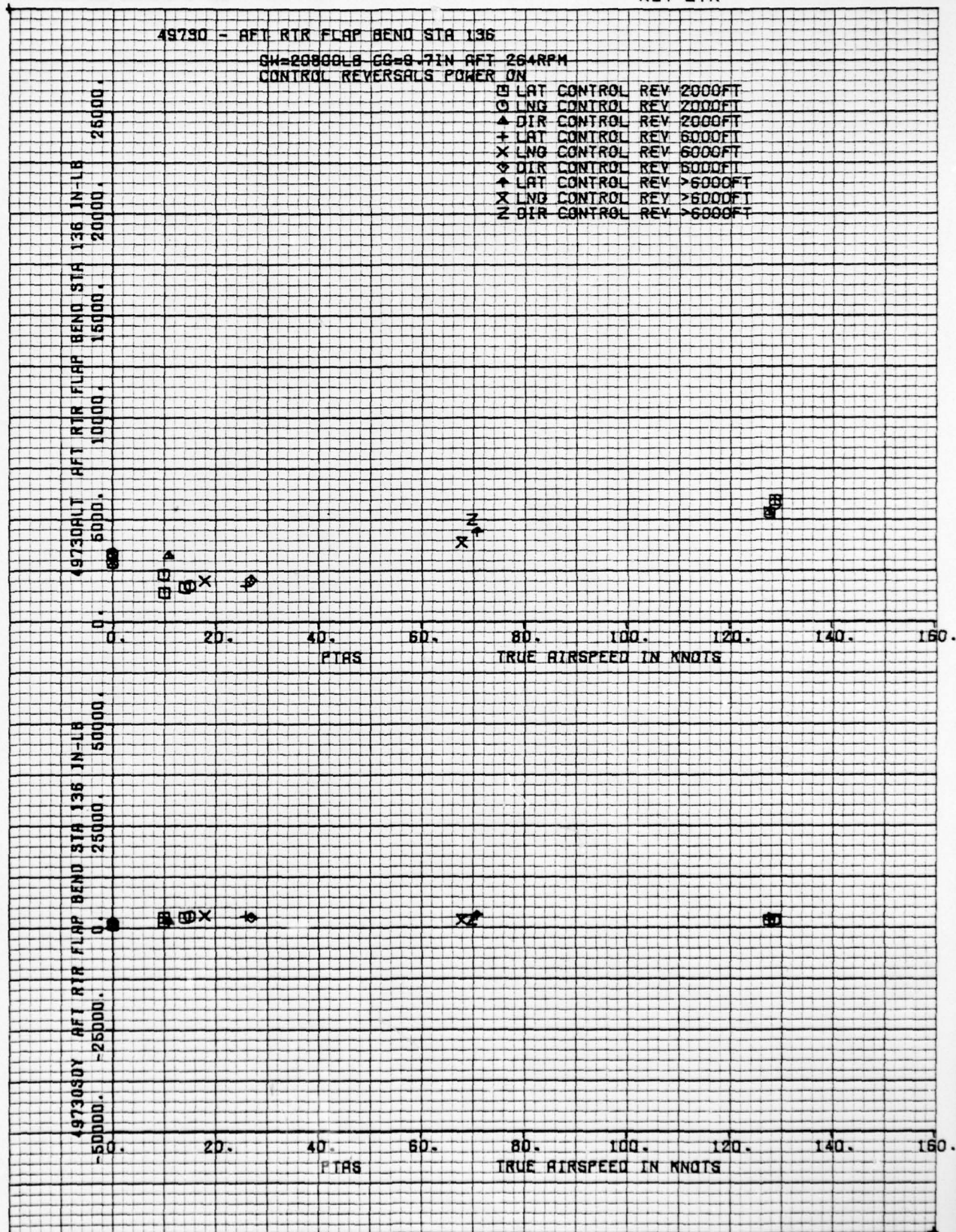
D210-11168-3

NUMBER **VOLUME 4**
REV LTRTHE **BOEING** COMPANY

49730 - AFT RTR FLAP BEND STA 136

SW=20800LB CG=8.71N AFT 264RPM
CONTROL REVERSALS POWER ON

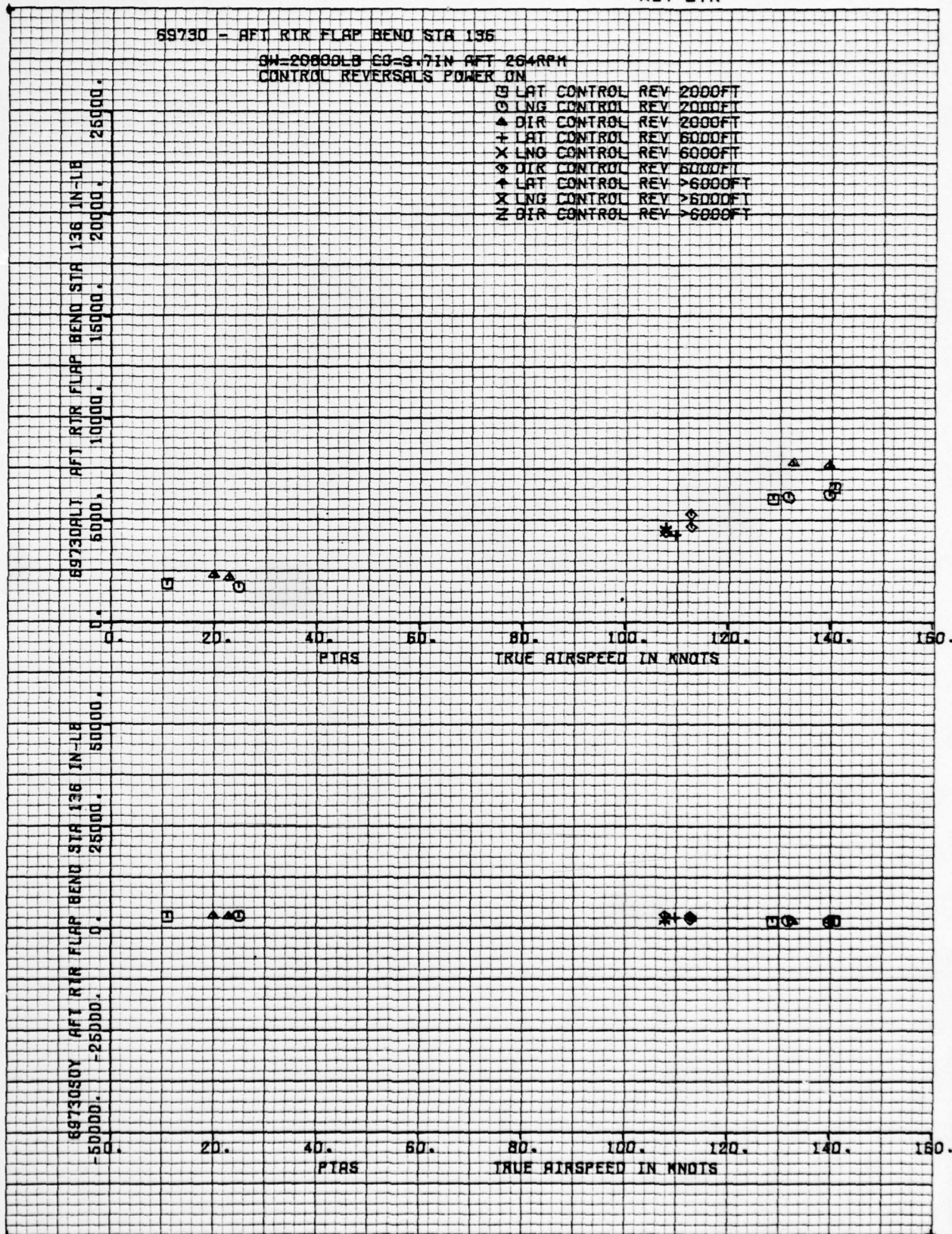
B LAT CONTROL REV 2000FT
 O LND CONTROL REV 2000FT
 ▲ DIR CONTROL REV 2000FT
 + LAT CONTROL REV 6000FT
 X LND CONTROL REV 6000FT
 ◆ DIR CONTROL REV 6000FT
 ◆ LAT CONTROL REV >6000FT
 X LND CONTROL REV >6000FT
 Z DIR CONTROL REV >6000FT



FORM 52300 (10/71)

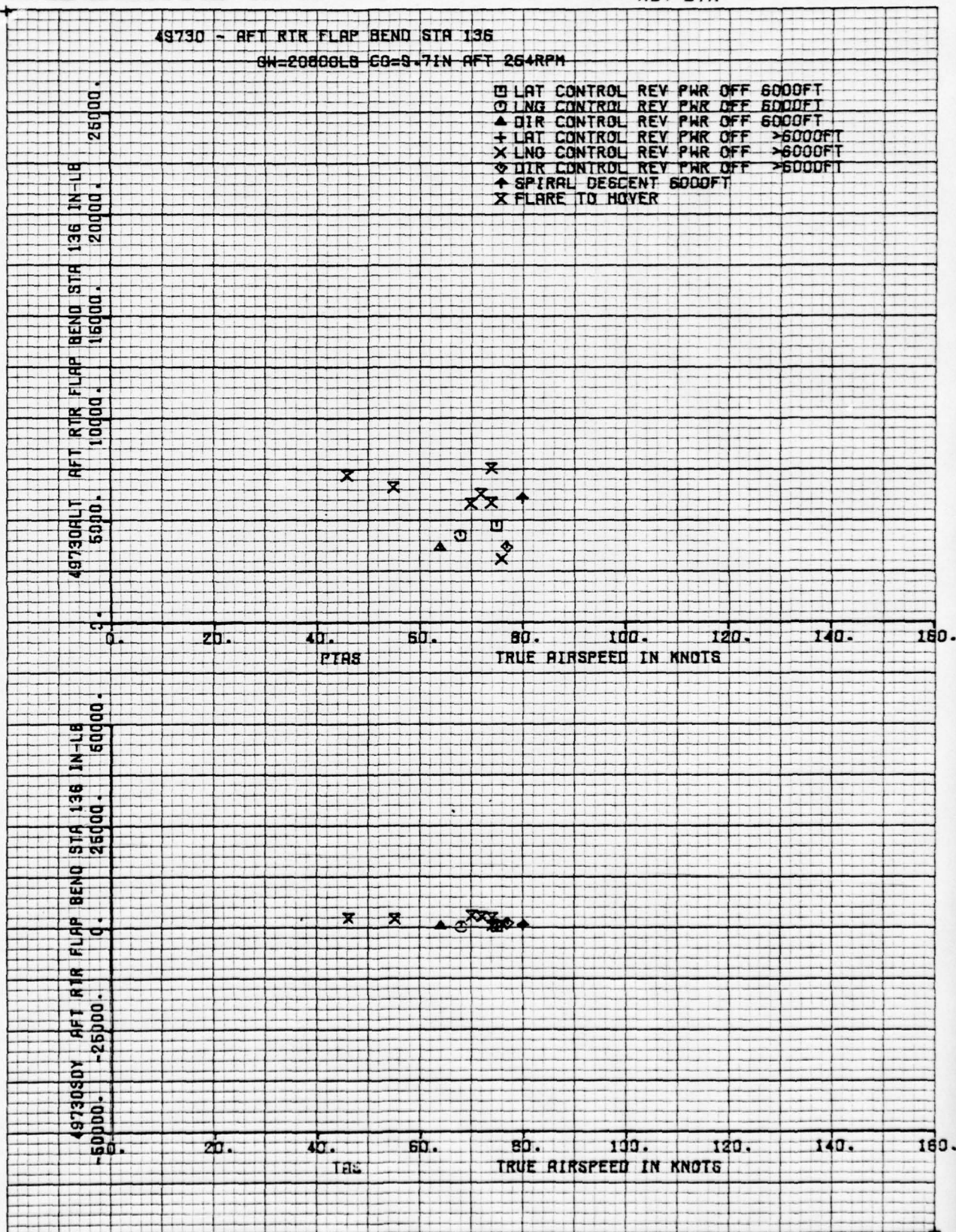
SHEET 245

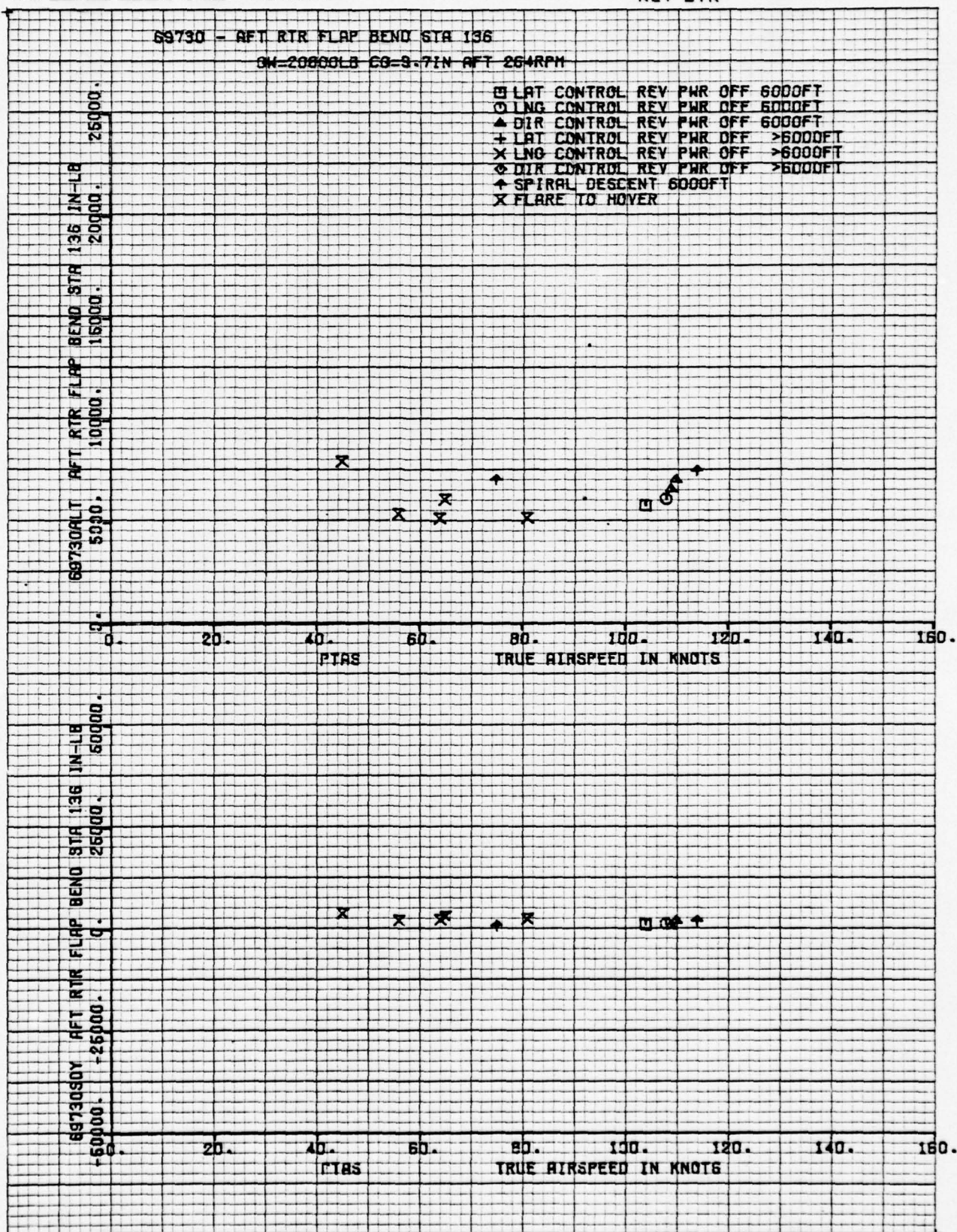
-20

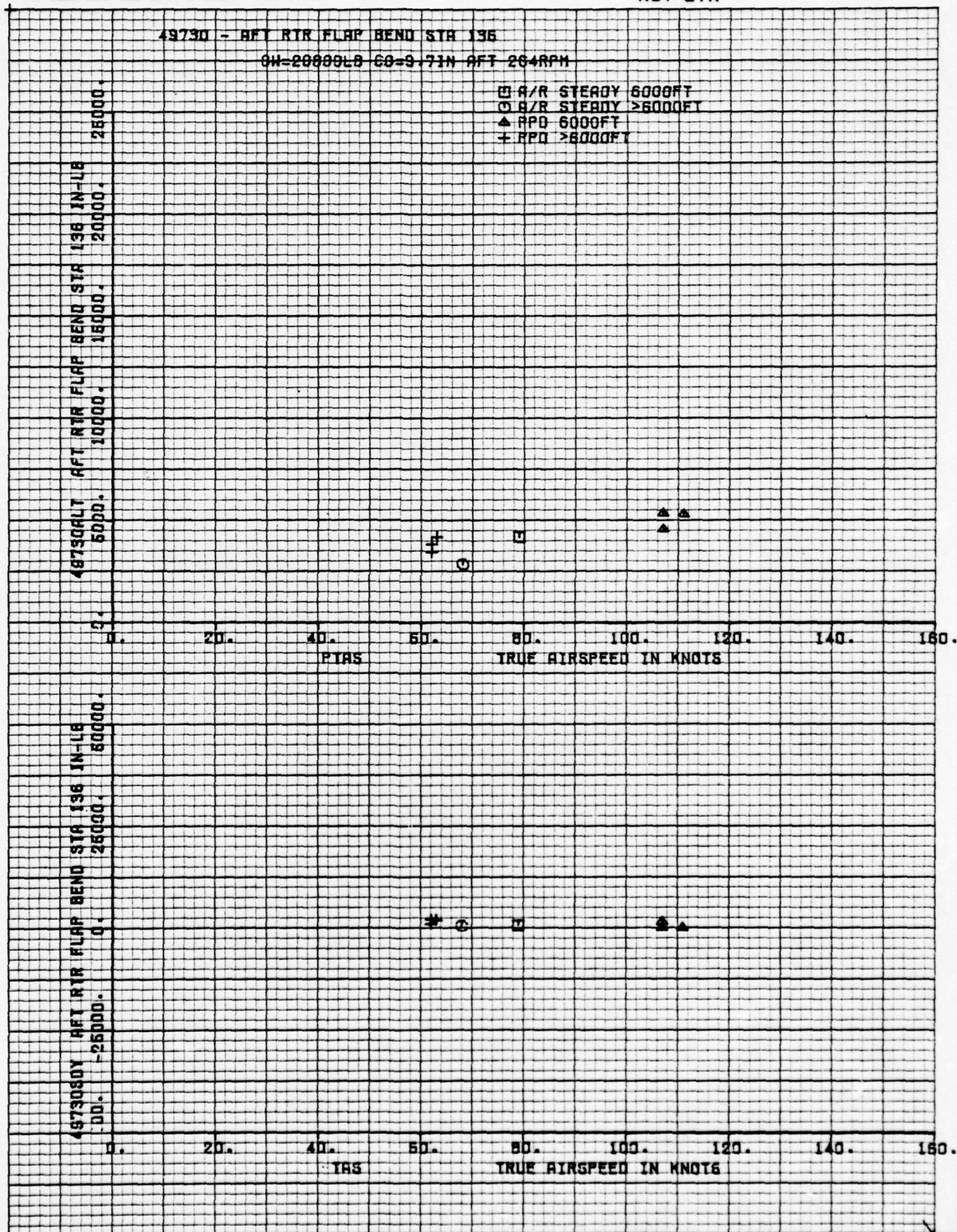


THE **BOEING** COMPANY

1 D21C-11168-3
NUMBER **VOLUME 4**
REV LTR



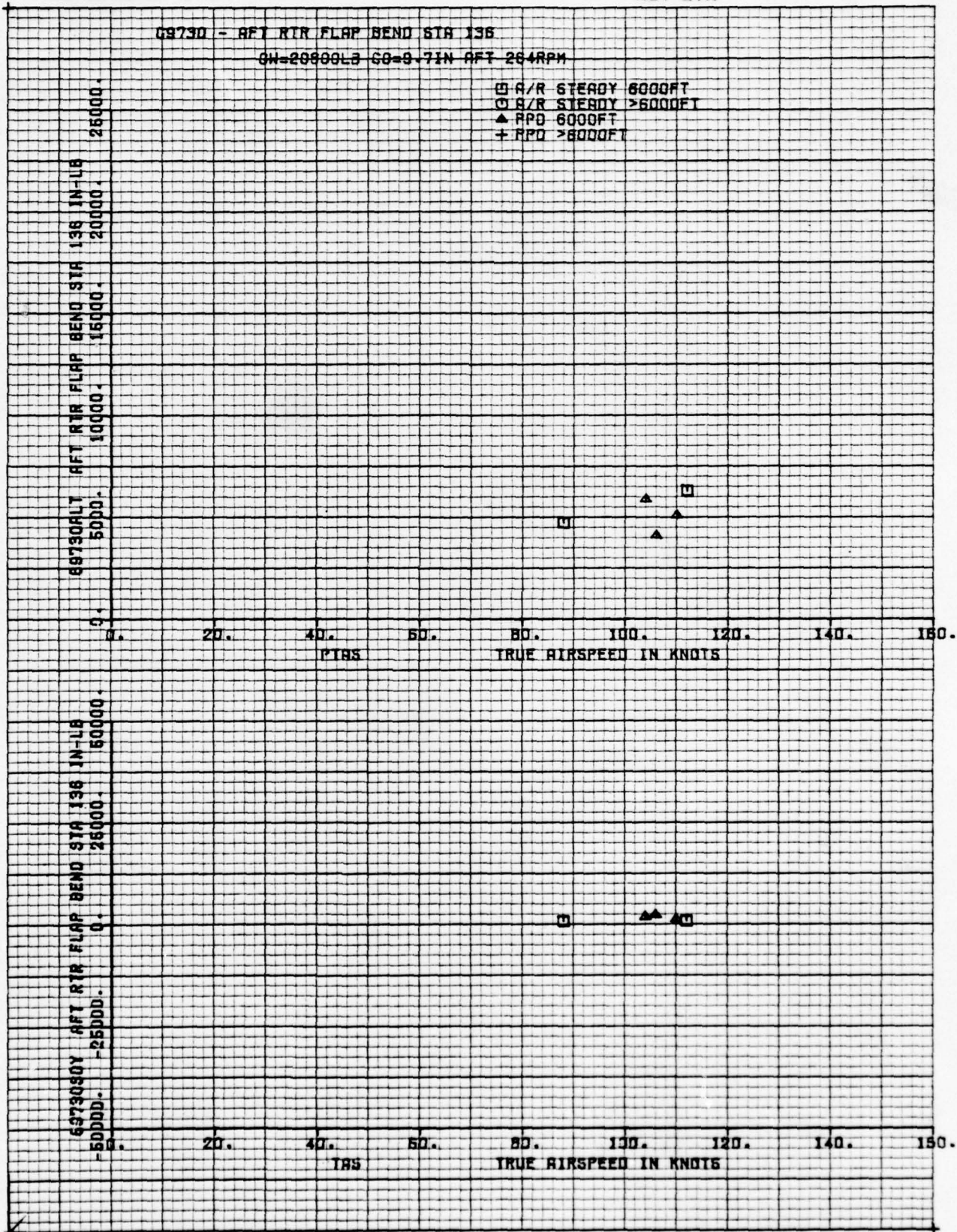


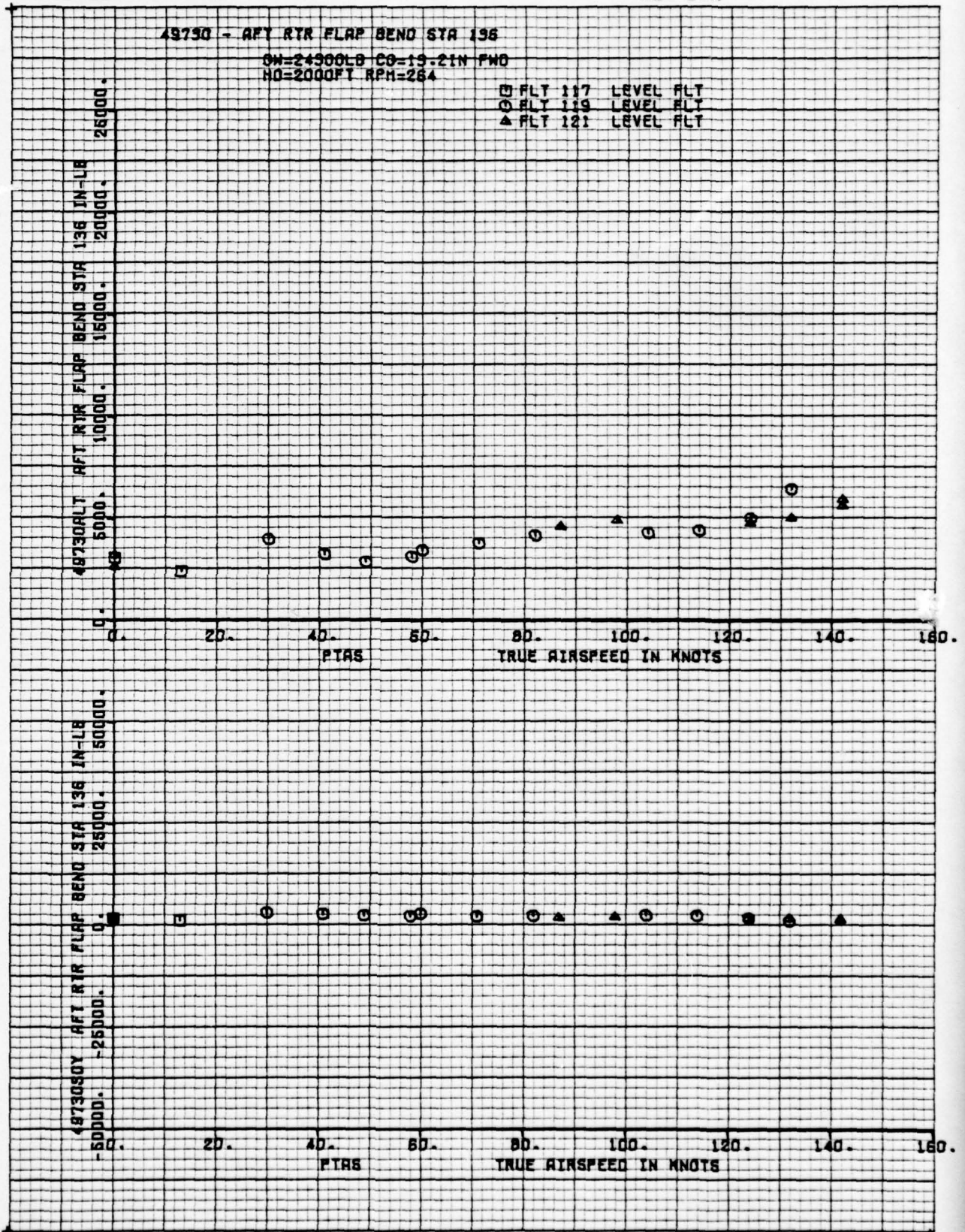


THE **BOEING** COMPANY

NUMBER
REV LTR

D210-11168-3
VOLUME 4



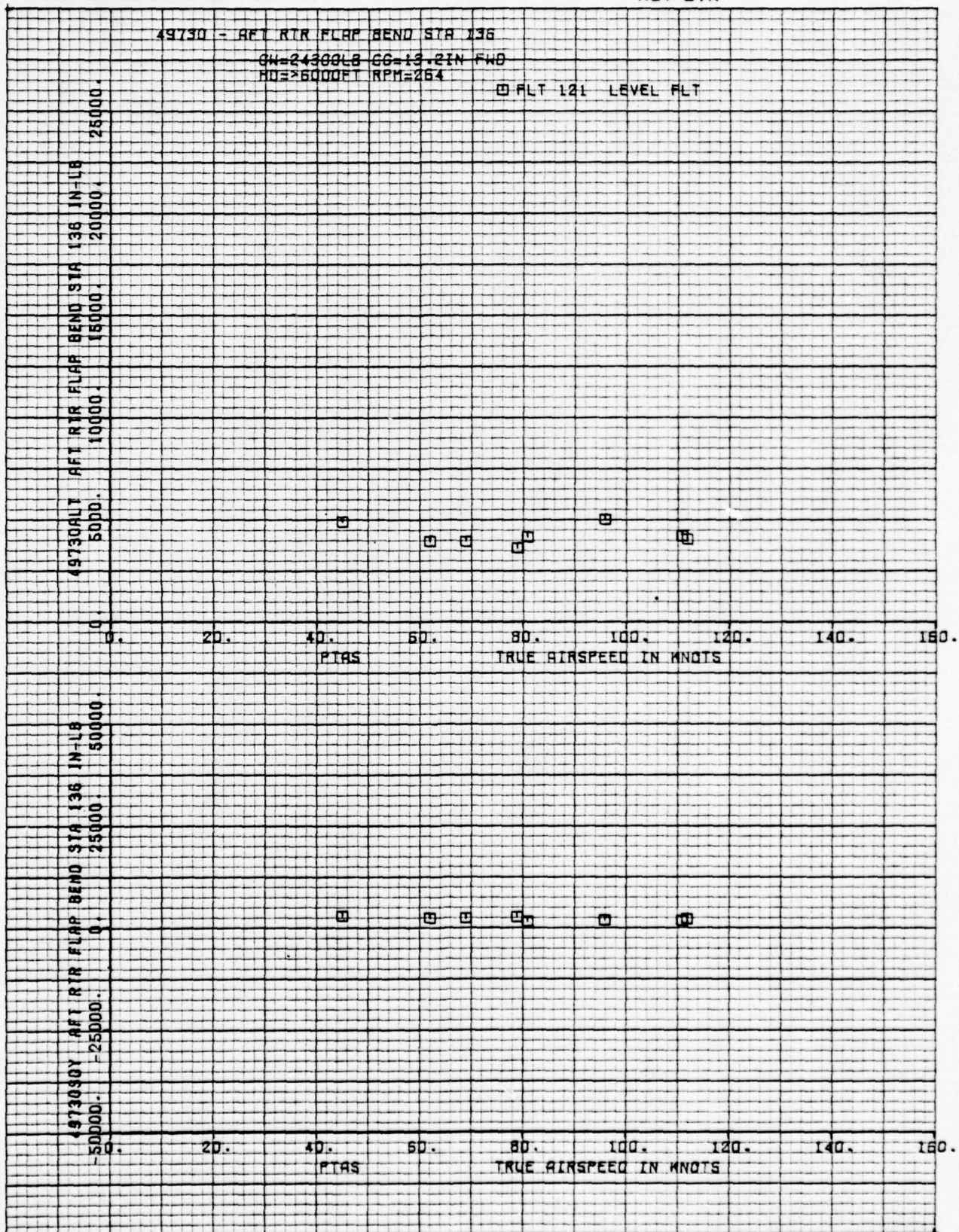


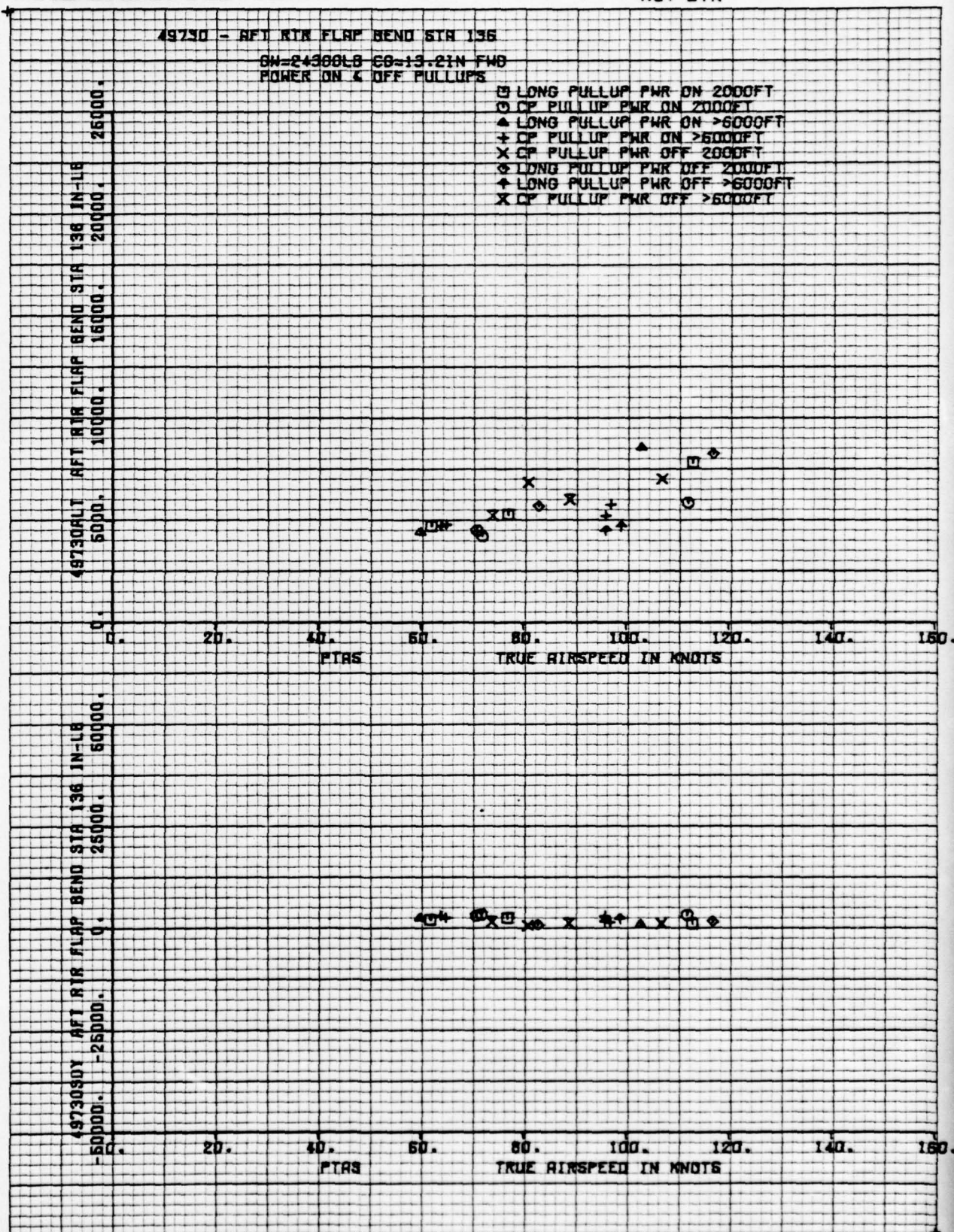
THE **BOEING** COMPANY

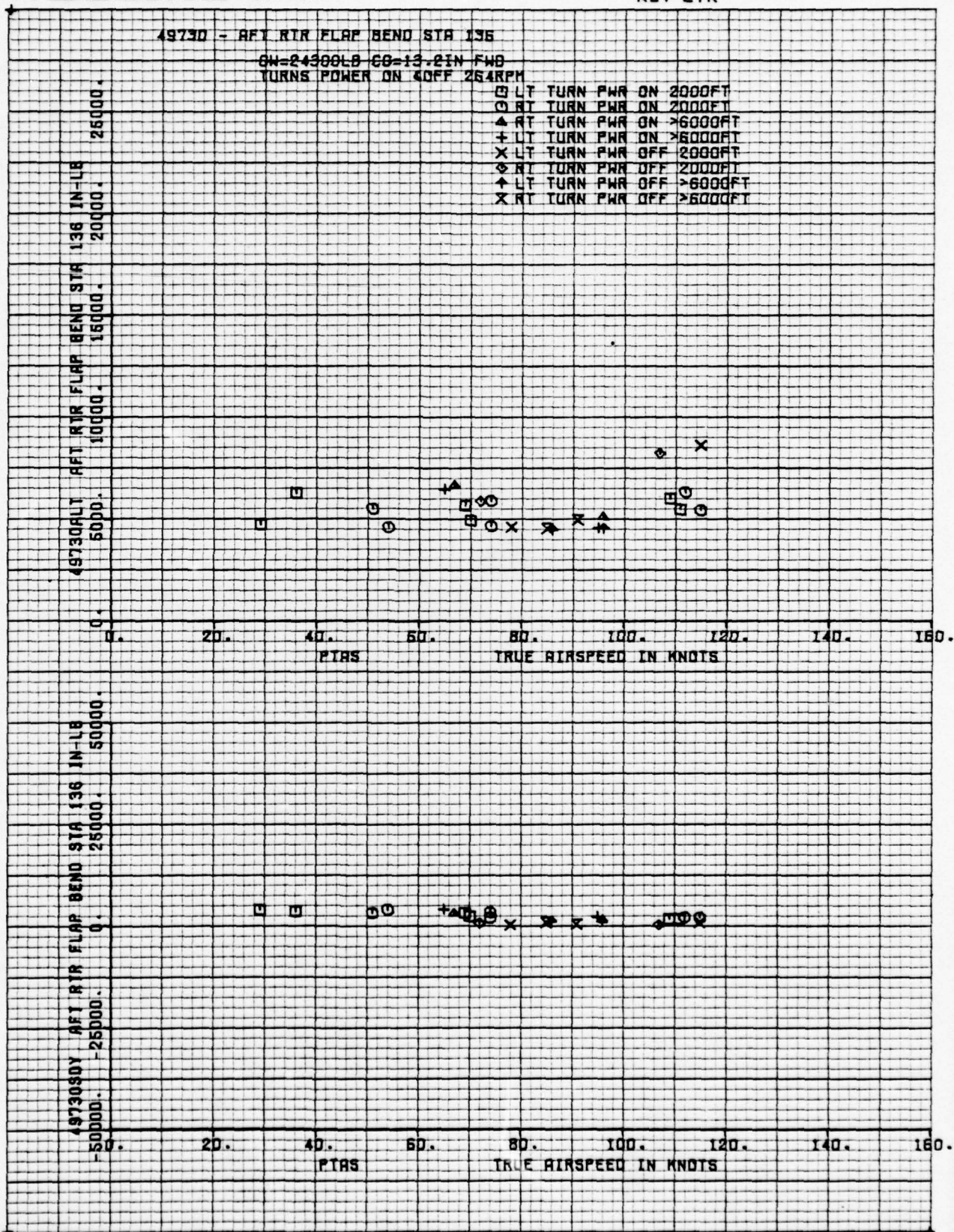
NUMBER
REV LTR

D210-11168-3

VOLUME 4



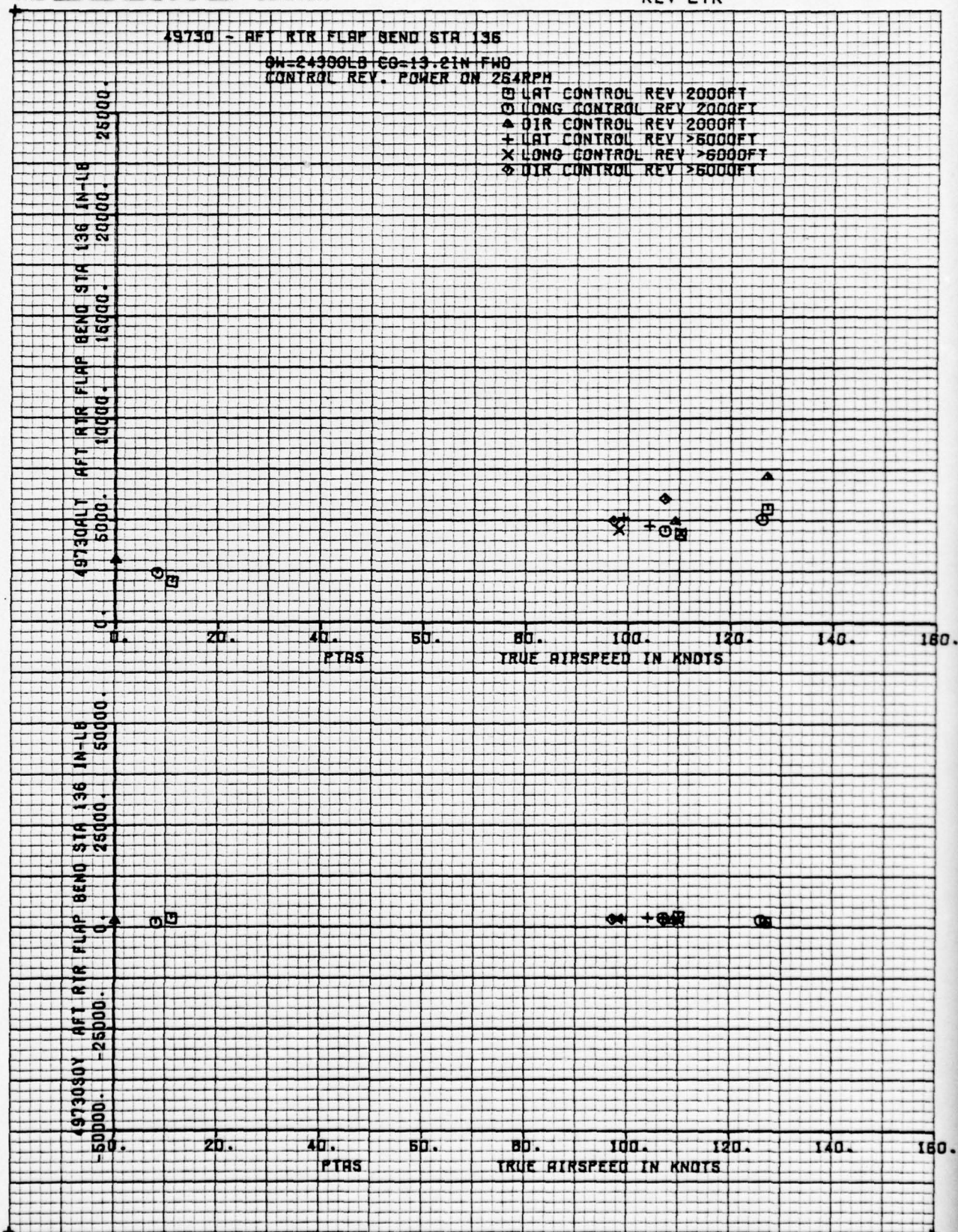




D210-11168-3

NUMBER **VOLUME 4**
REV LTR

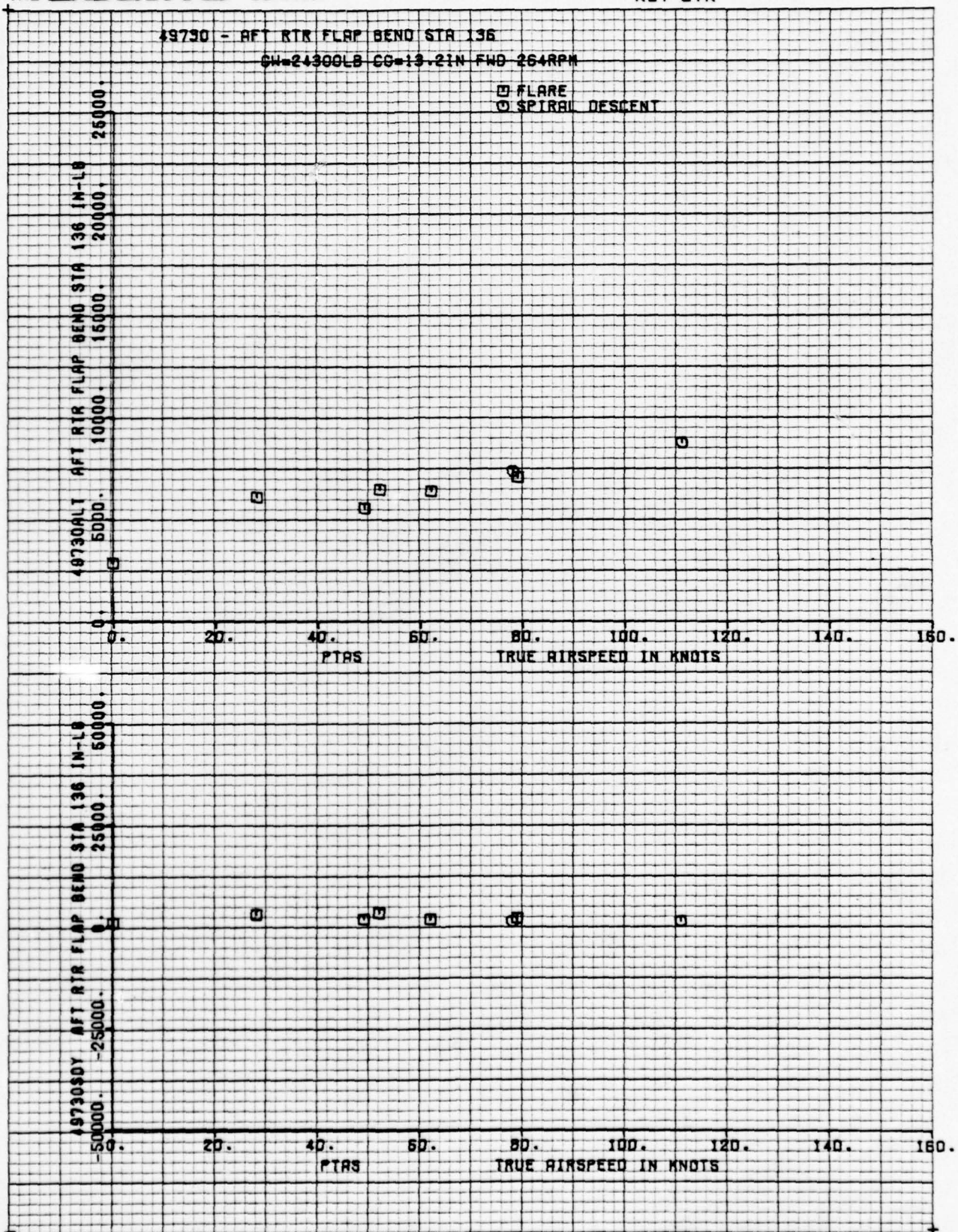
THE **BOEING** COMPANY

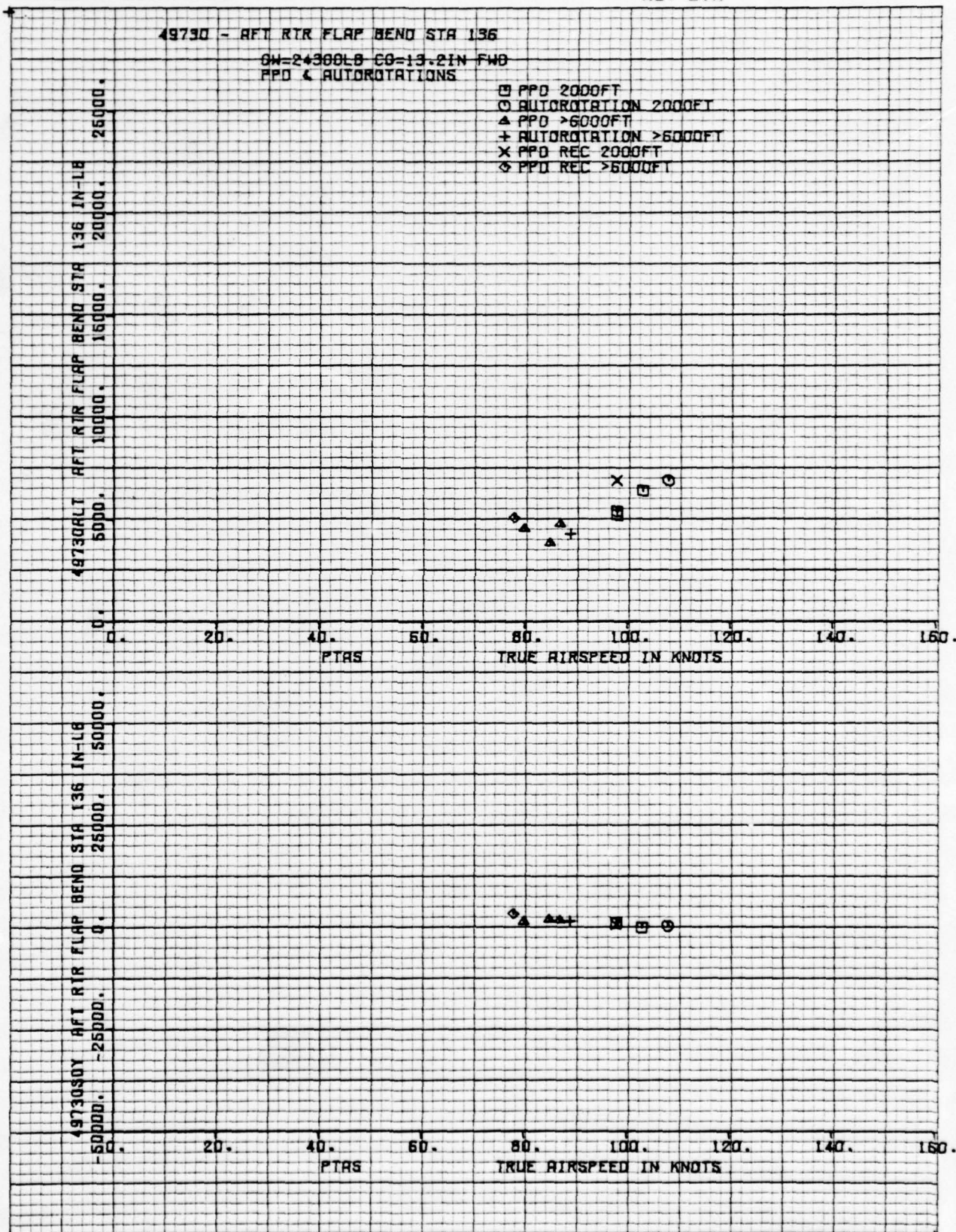


FORM 52300 (10/71)

SHEET 255

-21

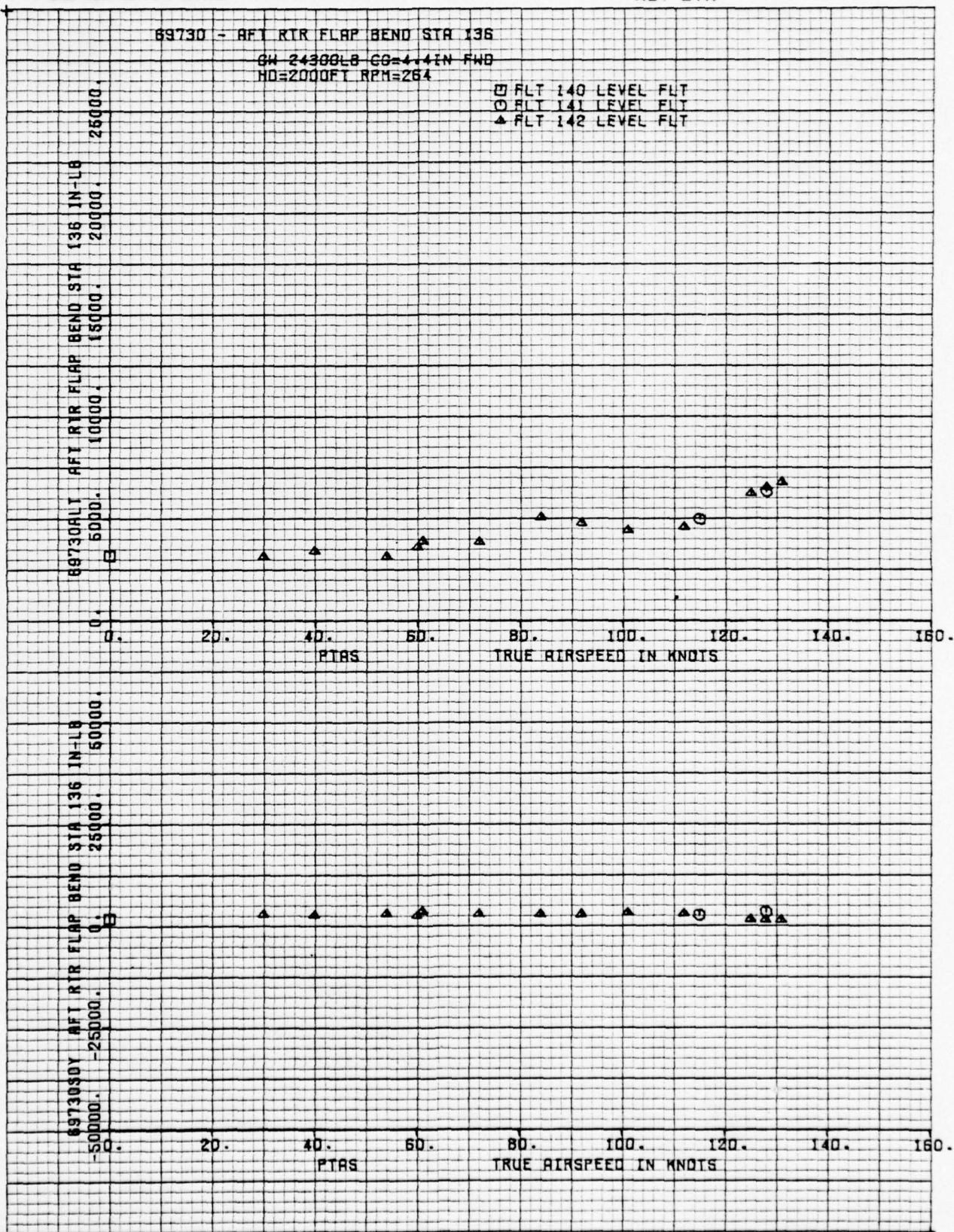




D210-11168-3

NUMBER 1 VOLUME 4
REV LTR

THE **BOEING** COMPANY



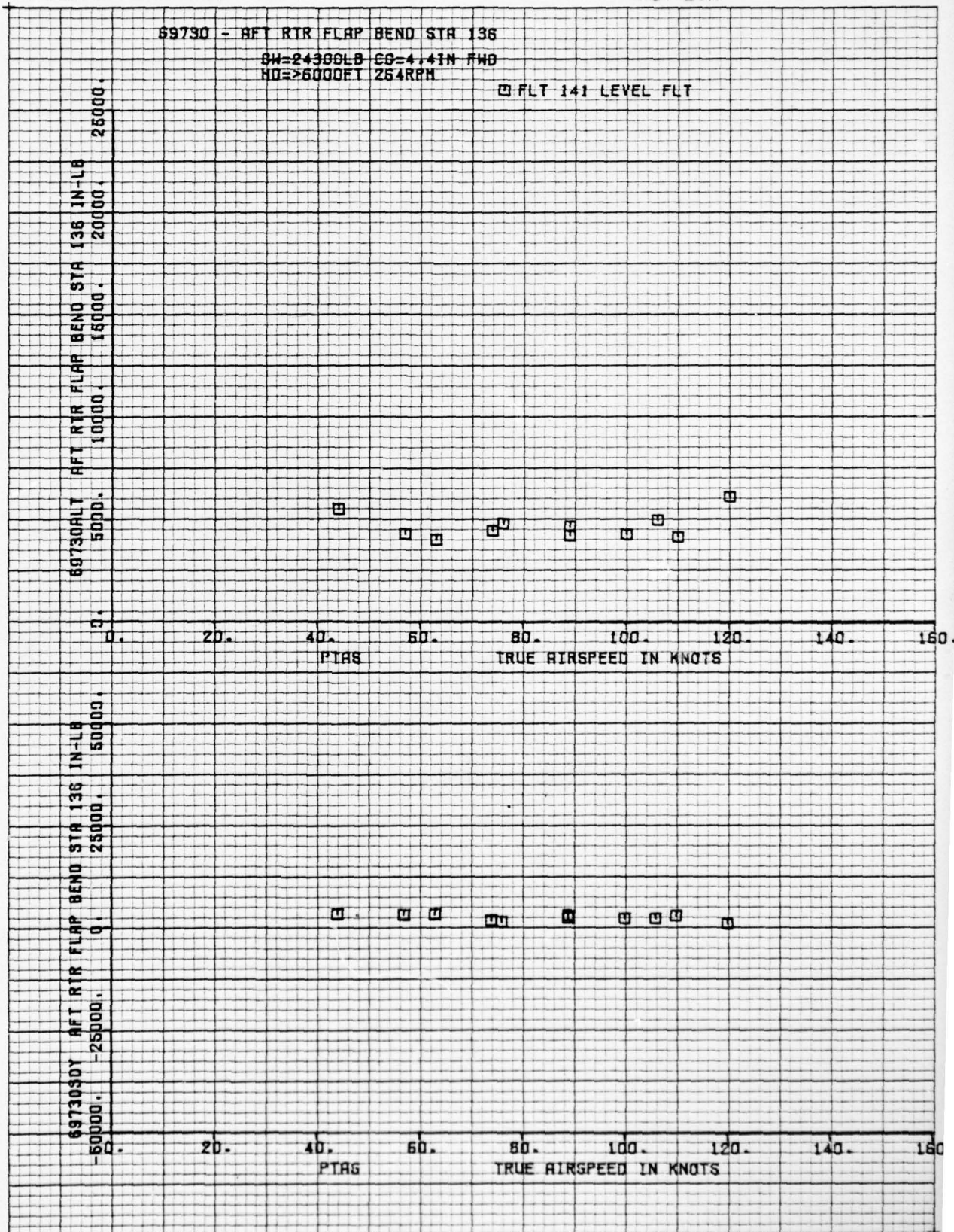
FORM 52300 (10/71)

SHEET 258

-8

THE **BOEING** COMPANY

D210-11168-3
NUMBER 1 VOLUME 4
REV LTR

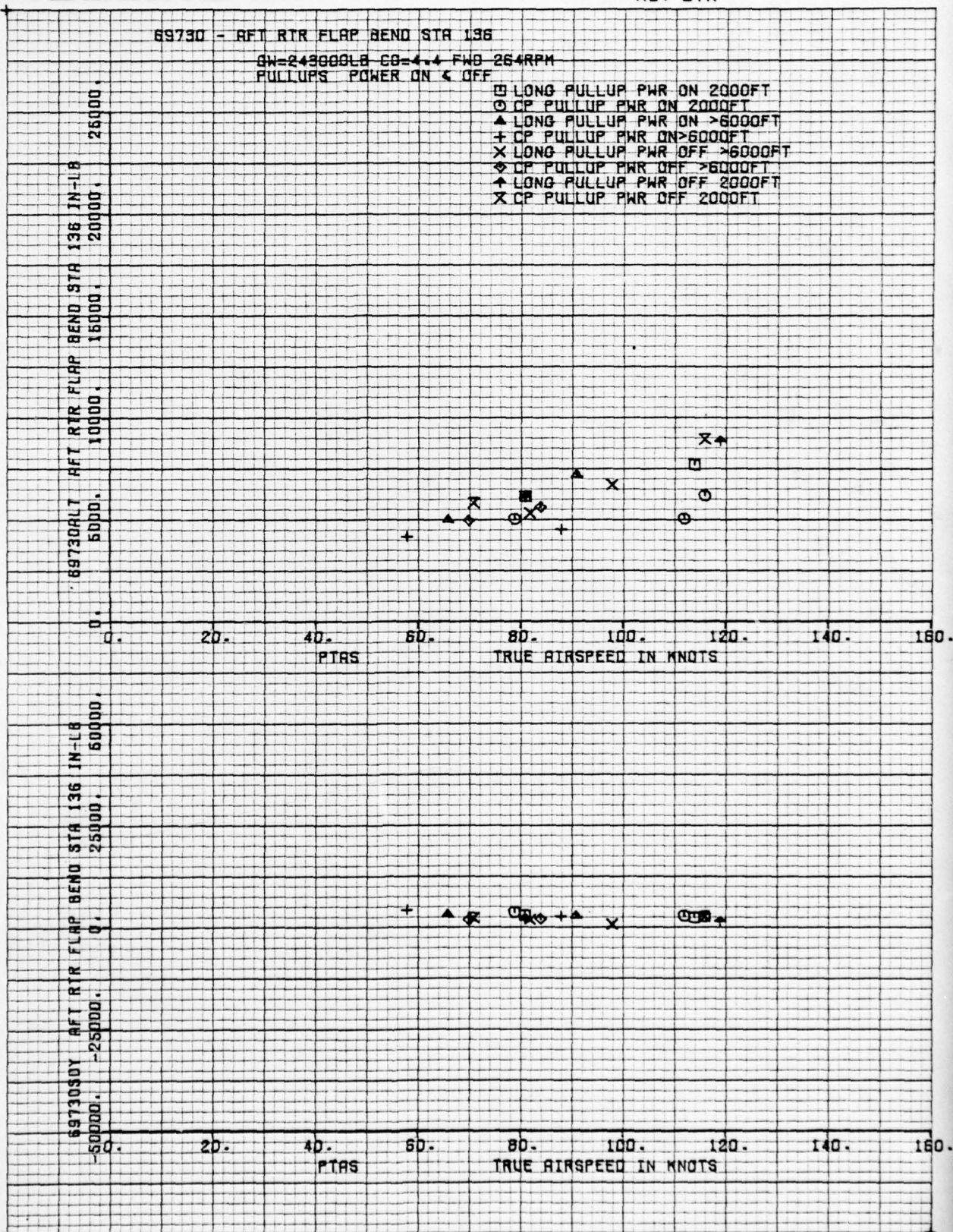


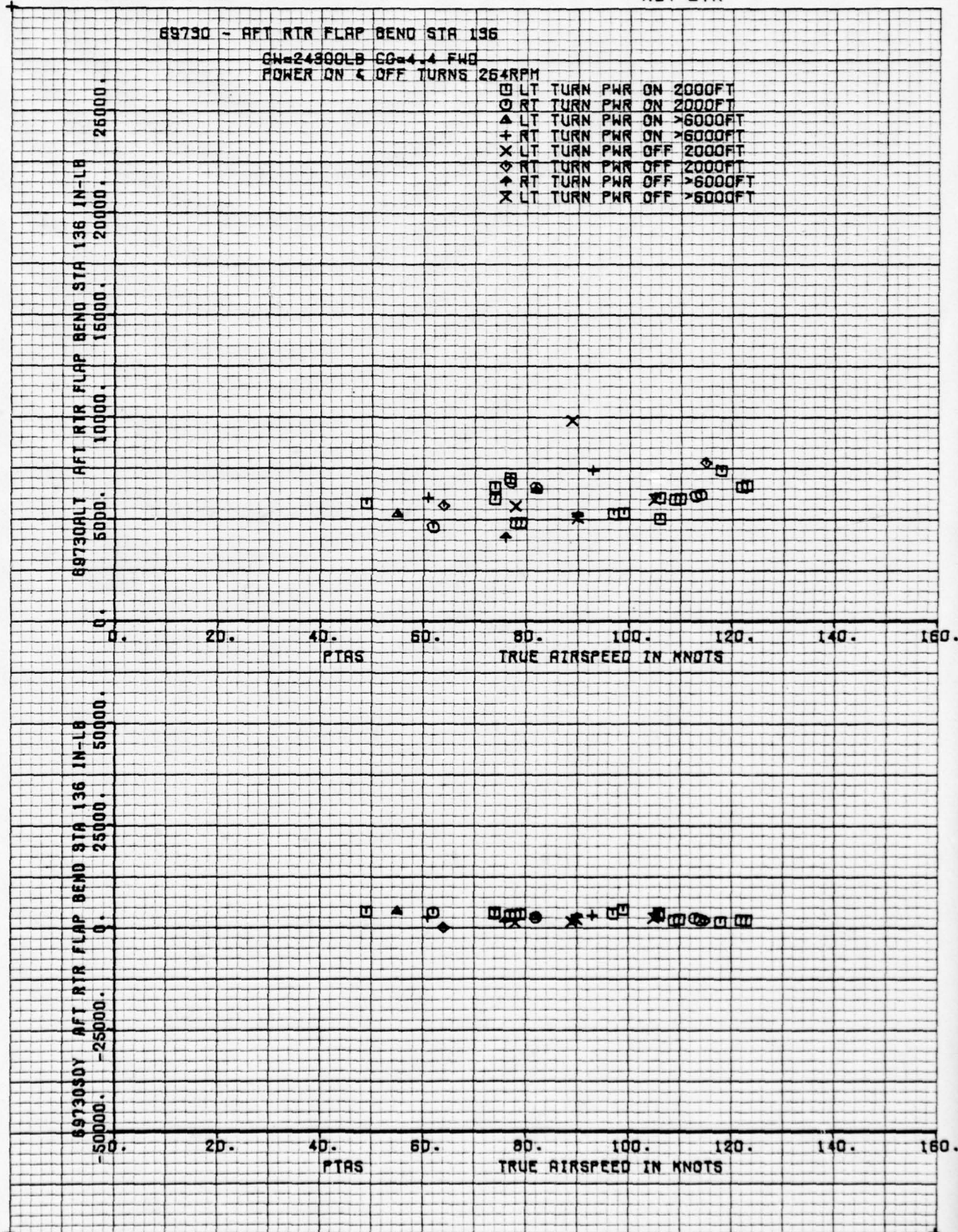
THE **BOEING** COMPANY

69730 - AFT RTR FLAP BEND STA 136

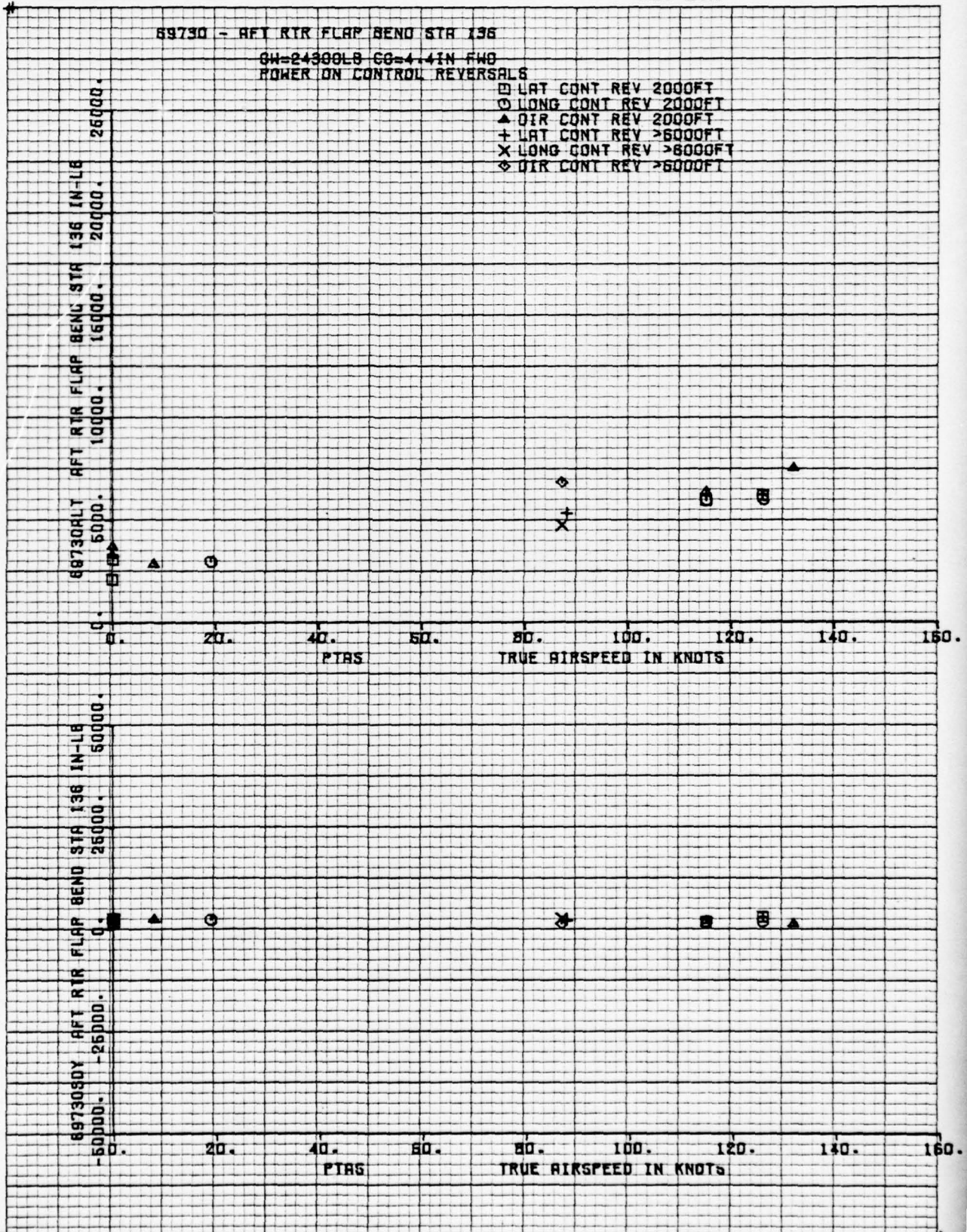
SW-243000LB CG-4.4 FWD 264RPM
PULLUPS POWER ON & OFF

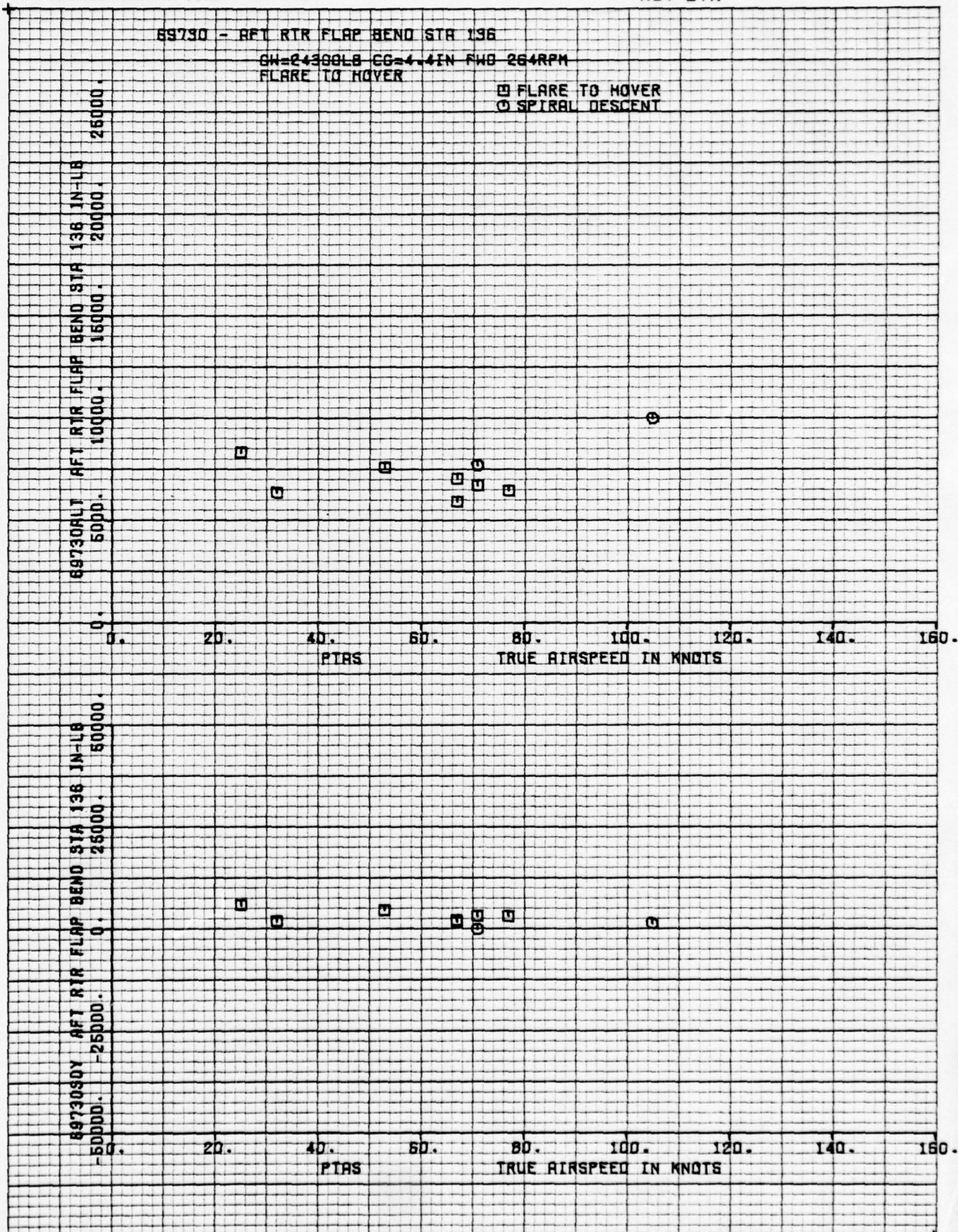
- LONG PULLUP PWR ON 2000FT
- CP PULLUP PWR ON 2000FT
- ▲ LONG PULLUP PWR ON >6000FT
- + CP PULLUP PWR ON >6000FT
- × LONG PULLUP PWR OFF >6000FT
- ◇ CP PULLUP PWR OFF >6000FT
- ↑ LONG PULLUP PWR OFF 2000FT
- × CP PULLUP PWR OFF 2000FT





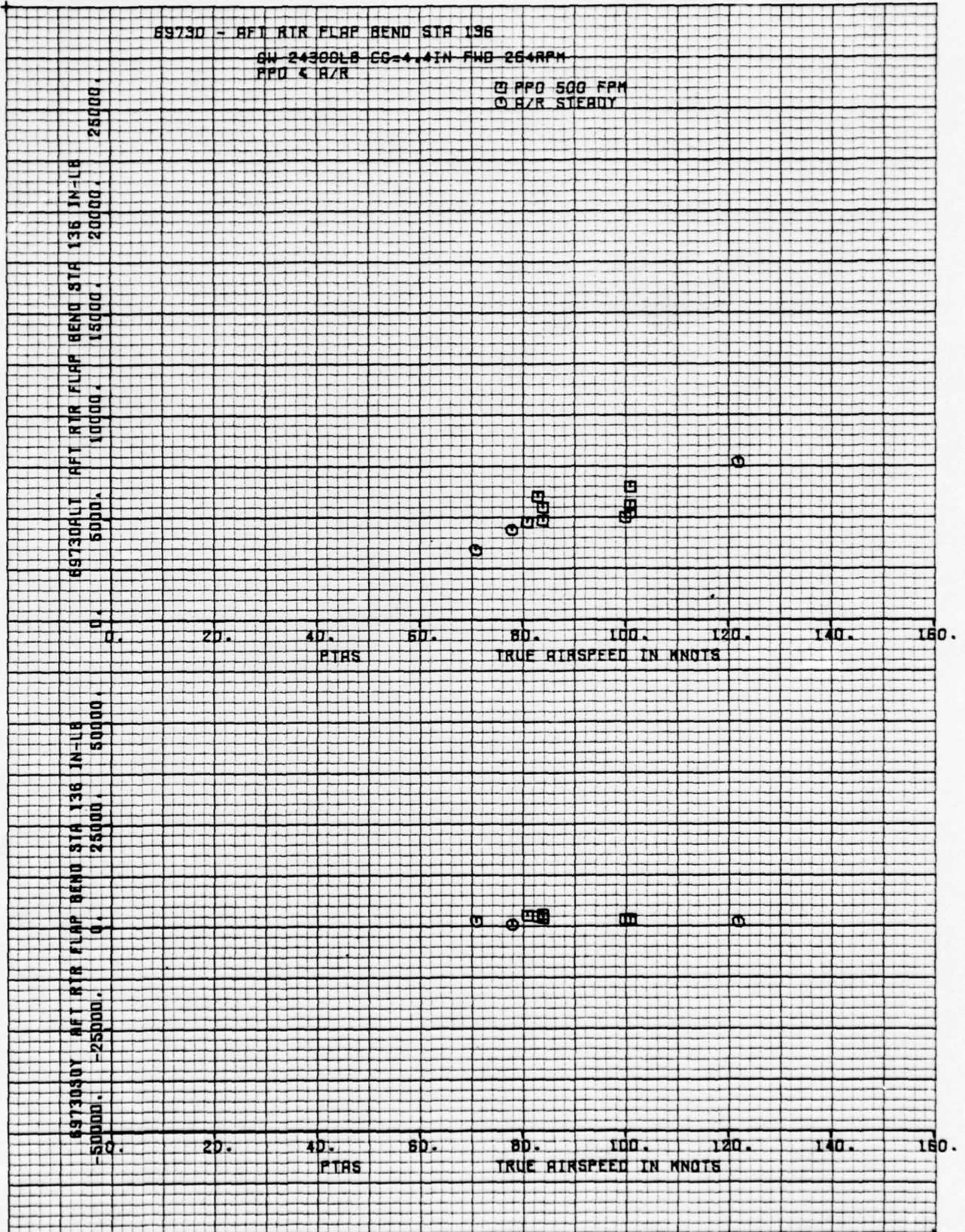
THE **BOEING** COMPANY

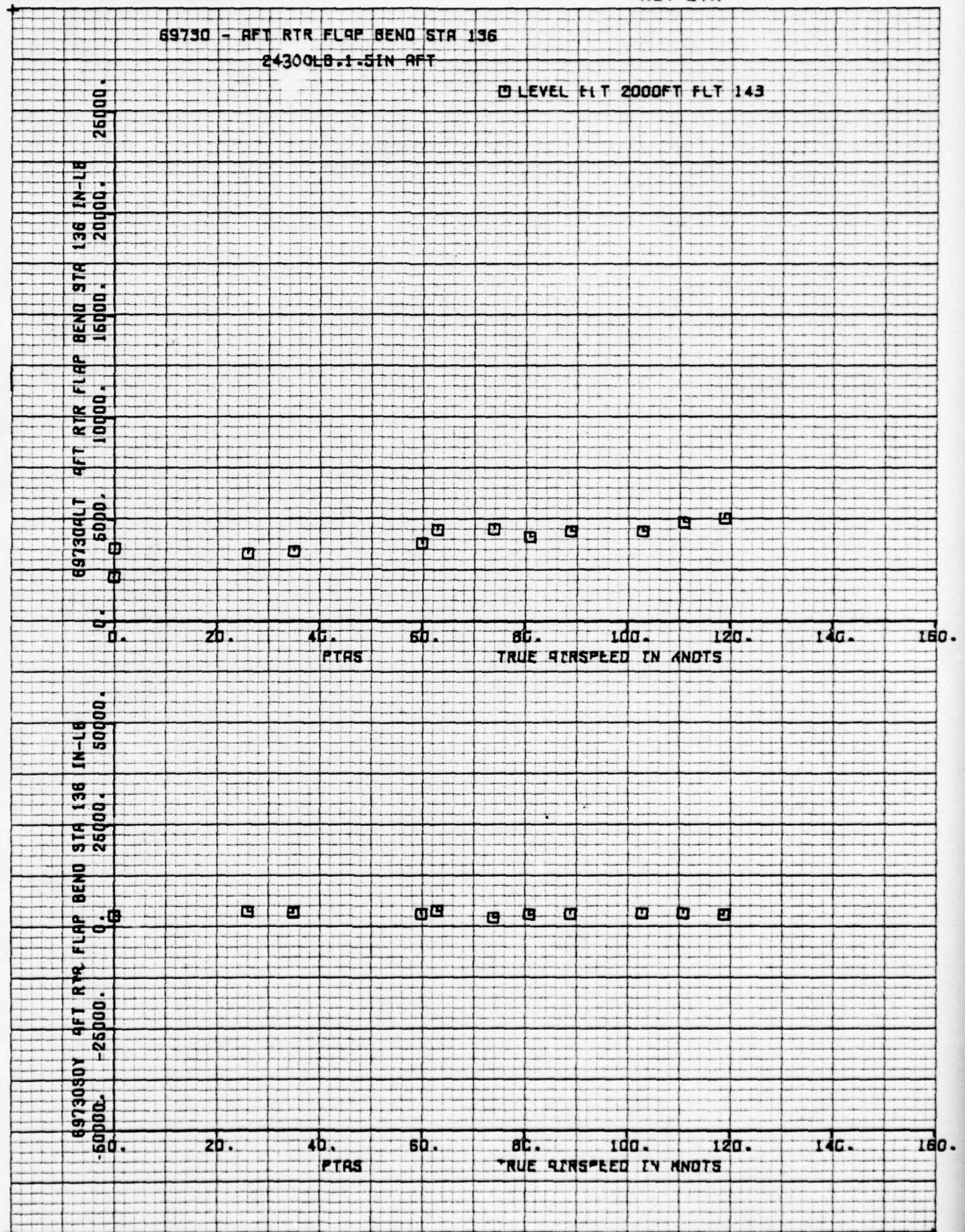




THE **BOEING** COMPANY

D210-11168-3
NUMBER VOLUME 4
REV LTR



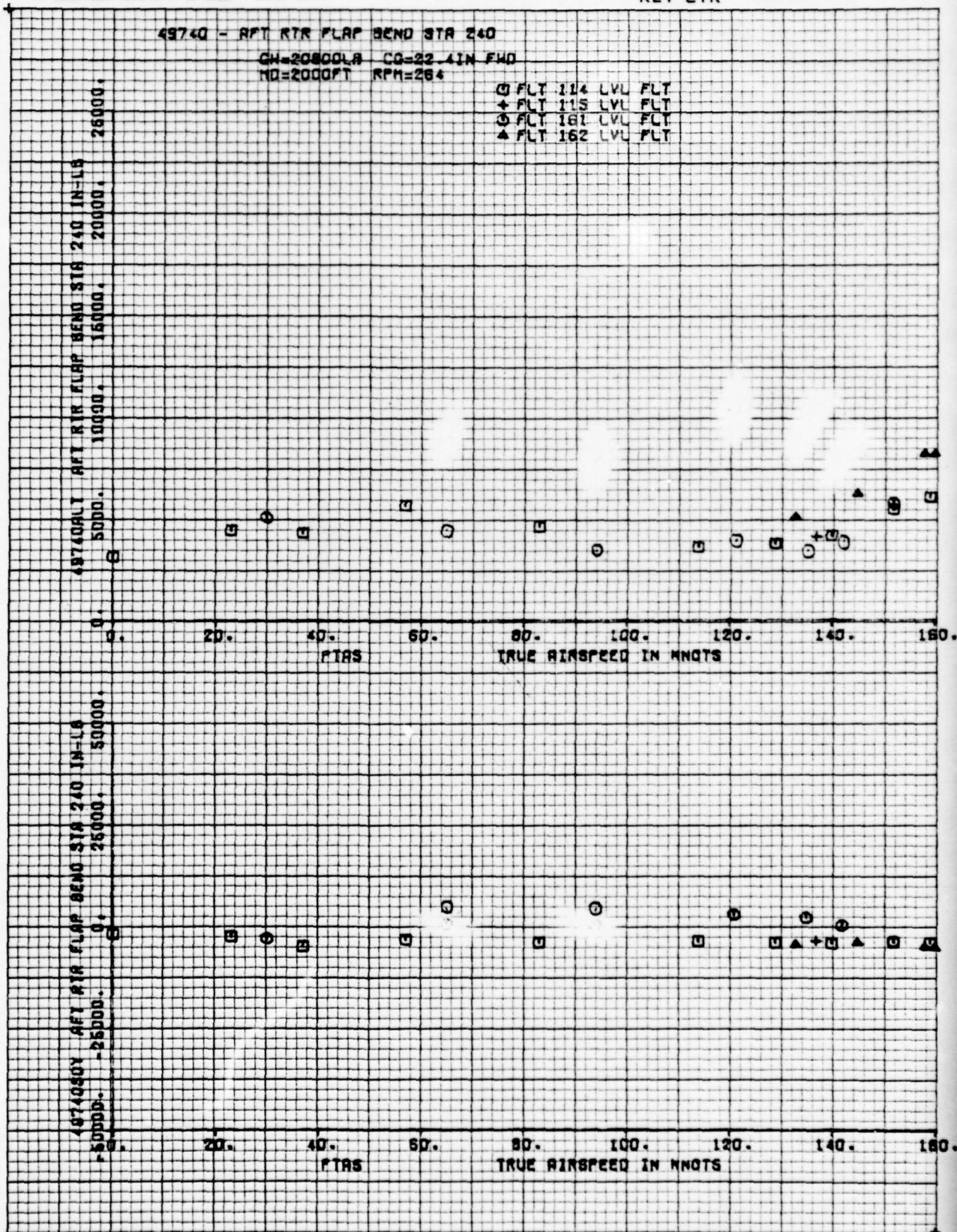


THE **BOEING** COMPANY

PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/28/78

NUMBER D210-11168-3
REV LTR Volume 4
MODEL NO.

4.8 Aft Blade Flap Bending Station 240.



D210-11168-3

NUMBER
REV LTR

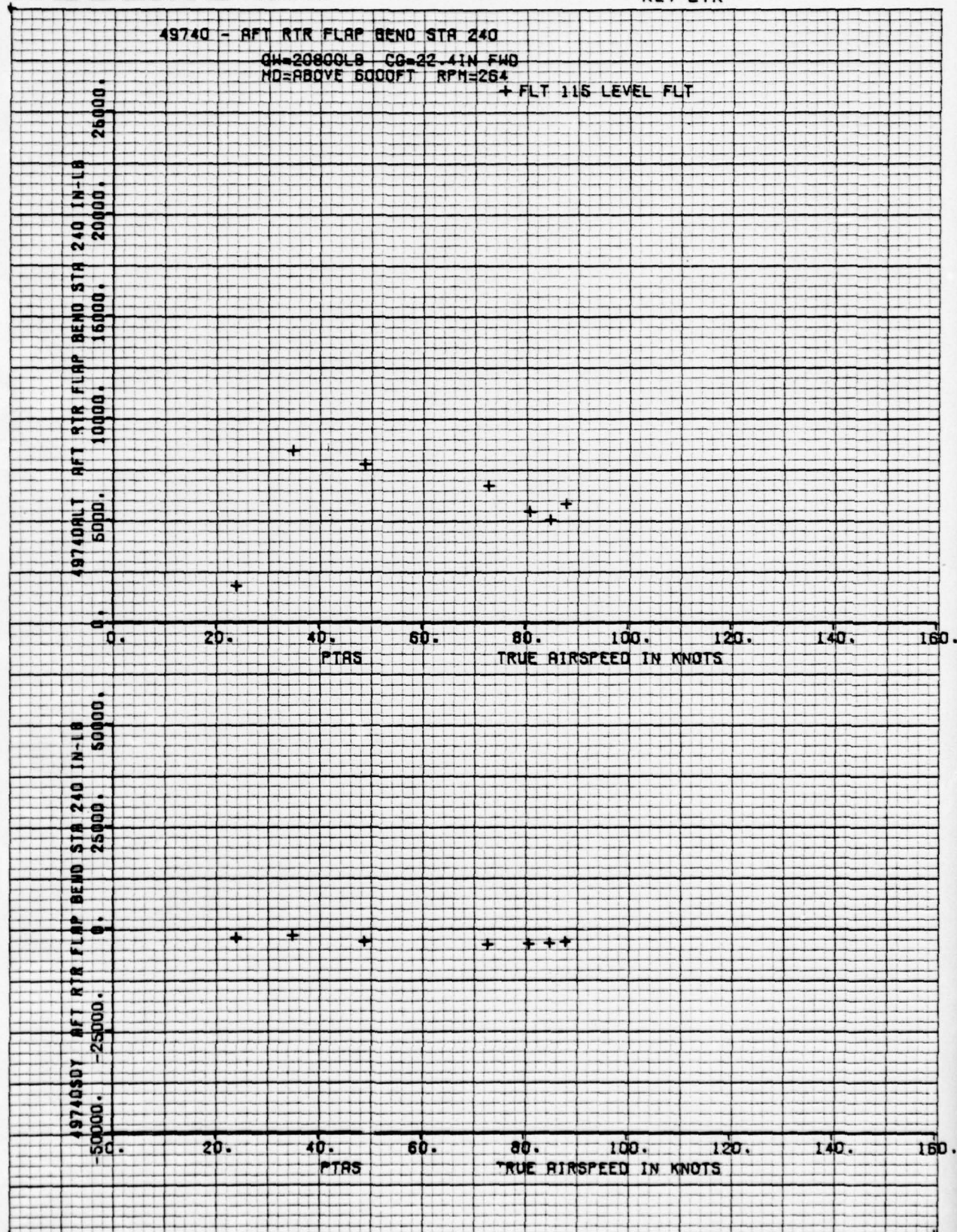
VOLUME 4

THE **BOEING** COMPANY

49740 - AFT RTR FLAP BEND STA 240

GW=20800LB CG=22.41N FWD
MD=ABOVE 6000FT RPM=264

+ FLT 115 LEVEL FLT

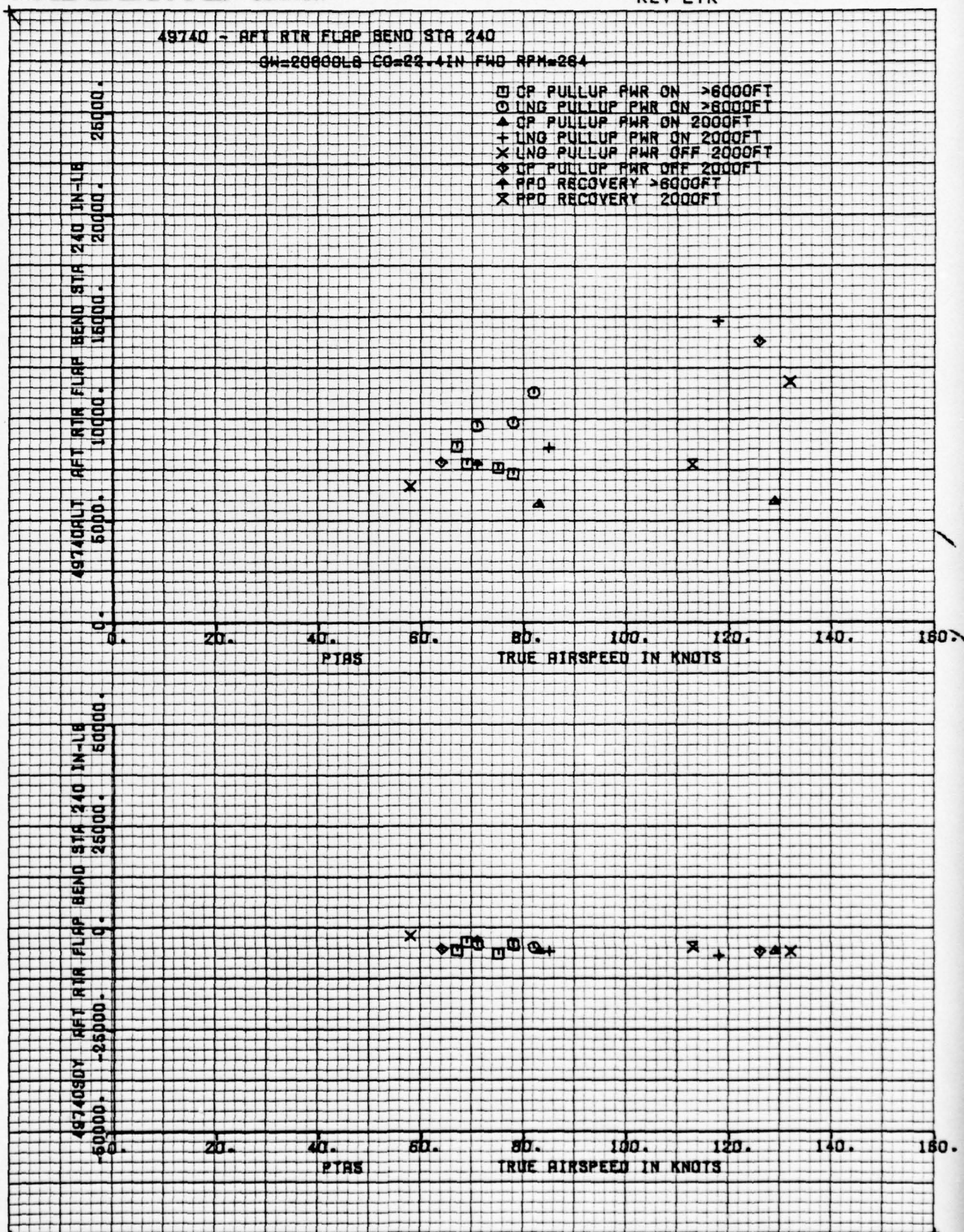


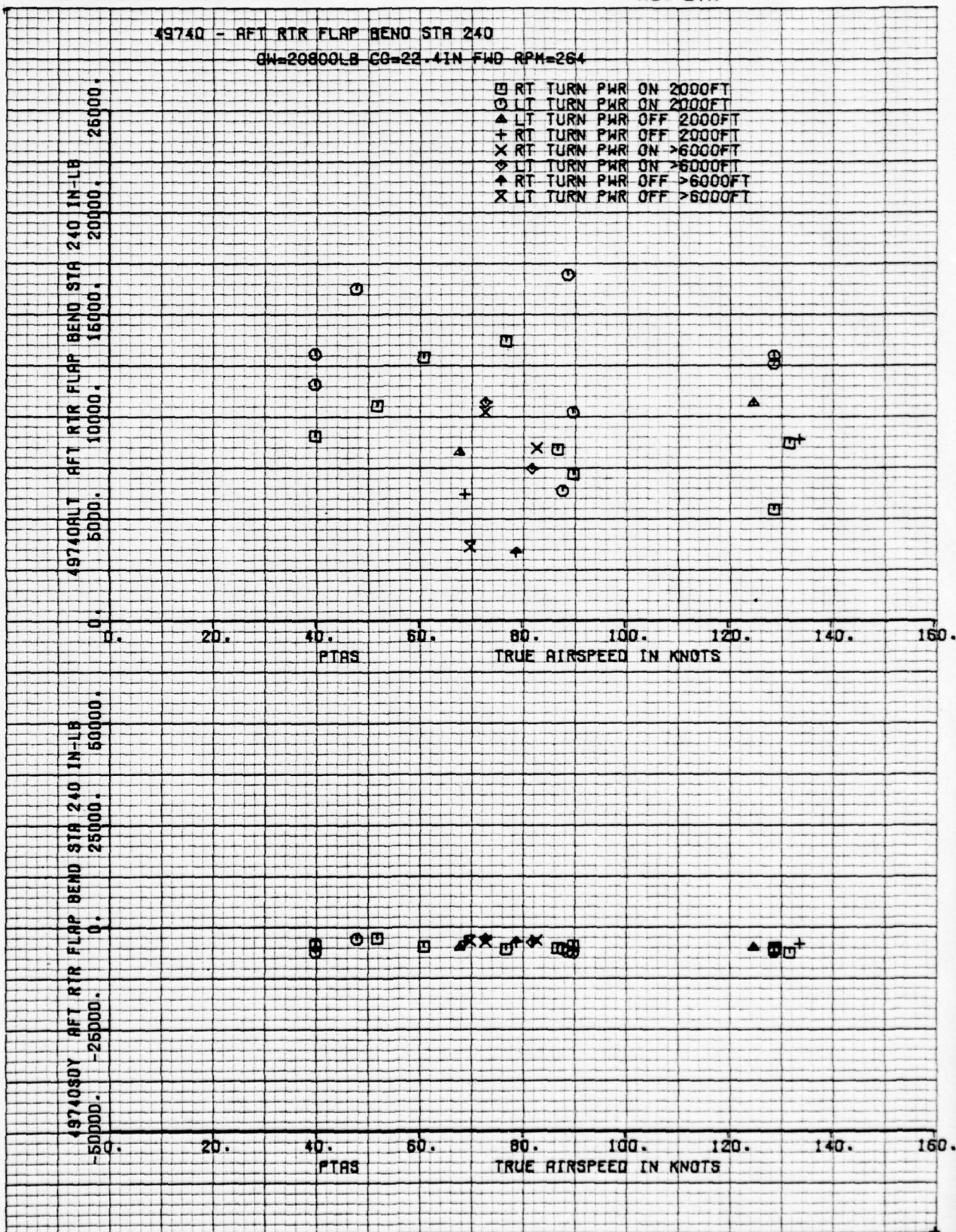
THE **BOEING** COMPANYNUMBER : VOLUME 4
REV LTR

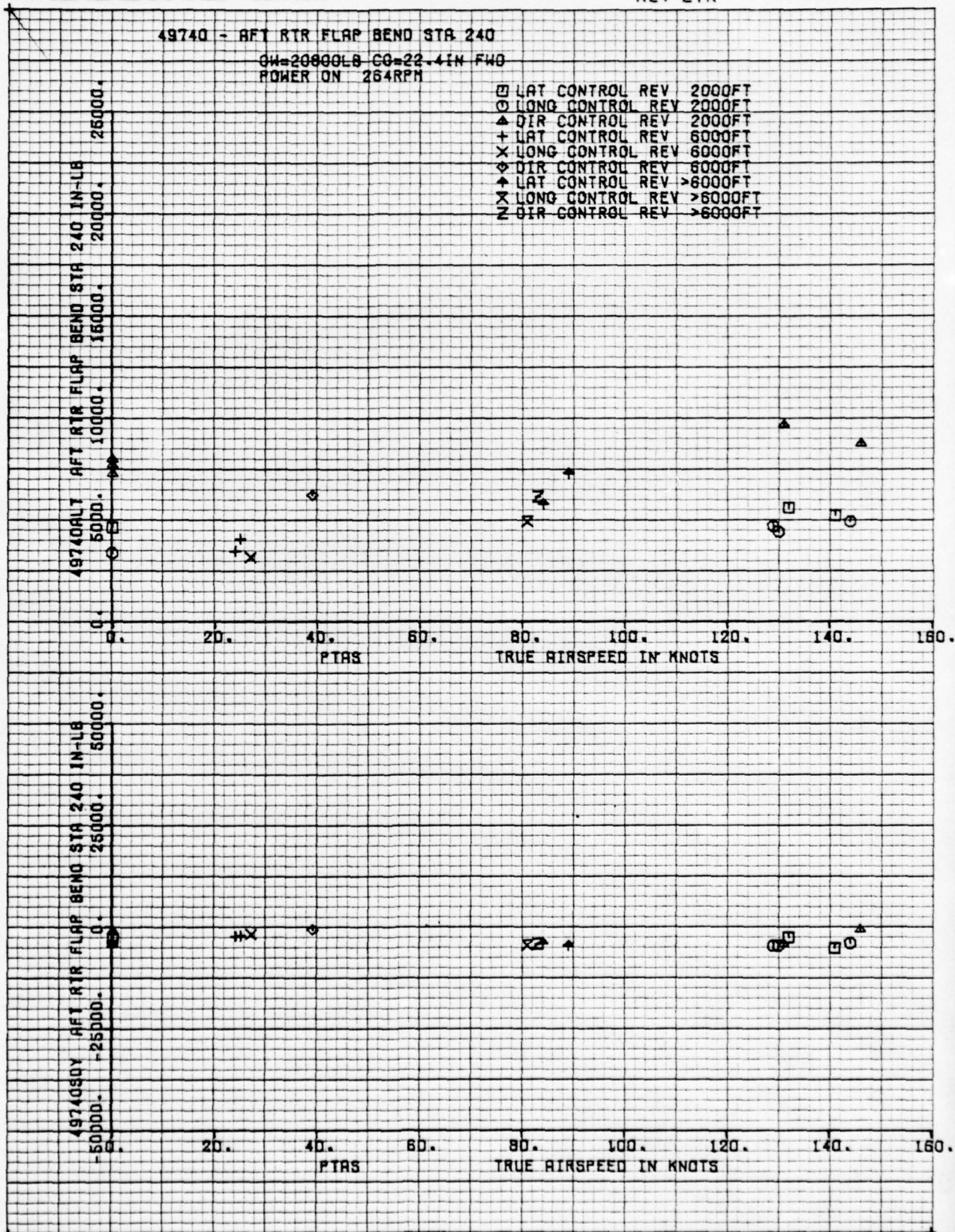
49740 - AFT RTR FLAP BEND STR 240

GW=26800LB CO=22.4IN FWD RPM=264

- CP PULLUP PWR ON >6000FT
 ○ LING PULLUP PWR ON >6000FT
 ▲ CP PULLUP PWR ON 2000FT
 + LING PULLUP PWR ON 2000FT
 × LING PULLUP PWR OFF 2000FT
 ◇ CP PULLUP PWR OFF 2000FT
 ↑ PFD RECOVERY >6000FT
 × PFD RECOVERY 2000FT

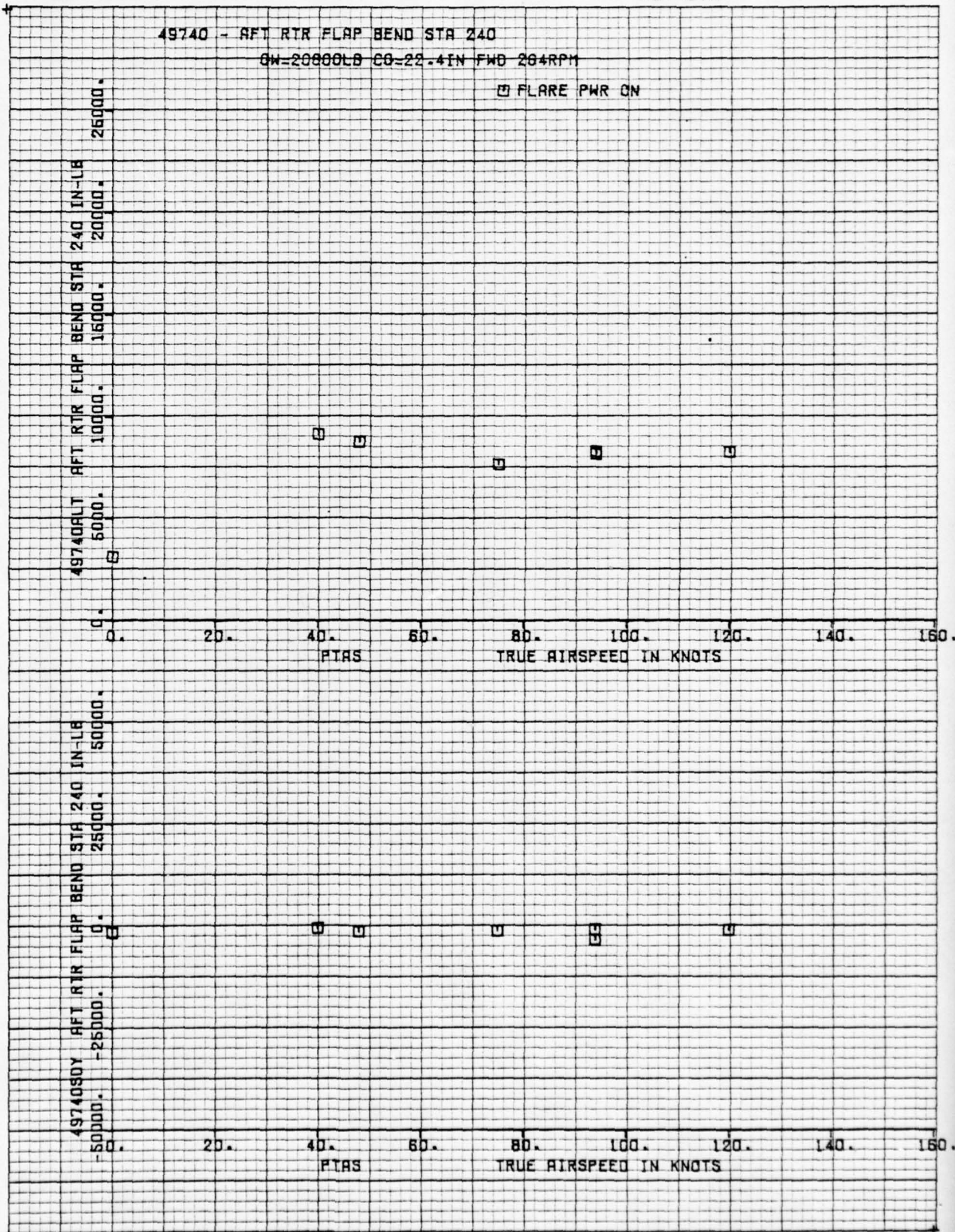






THE **BOEING** COMPANY

NUMBER **D210-11168-3**
REV LTR **VOLUME 4**



D210-11168-3

NUMBER

VOLUME 4

REV LTR

THE **BOEING** COMPANY

49740 - AFT RTR FLAP BEND STA 240

GW=20800LB CG=22.4IN FWD
POWER OFF 264RPM

□ LAT CONTROL REV 2000FT
 ○ LONG CONTROL REV 2000FT
 ▲ DIR CONTROL REV 2000FT
 ↑ LAT CONTROL REV >6000FT
 X LONG CONTROL REV >6000FT
 Z DIR CONTROL REV >6000FT

 49740ALT AFT RTR FLAP BEND STA 240 IN-LB
 26000.
 20000.
 16000.
 10000.
 5000.
 0.

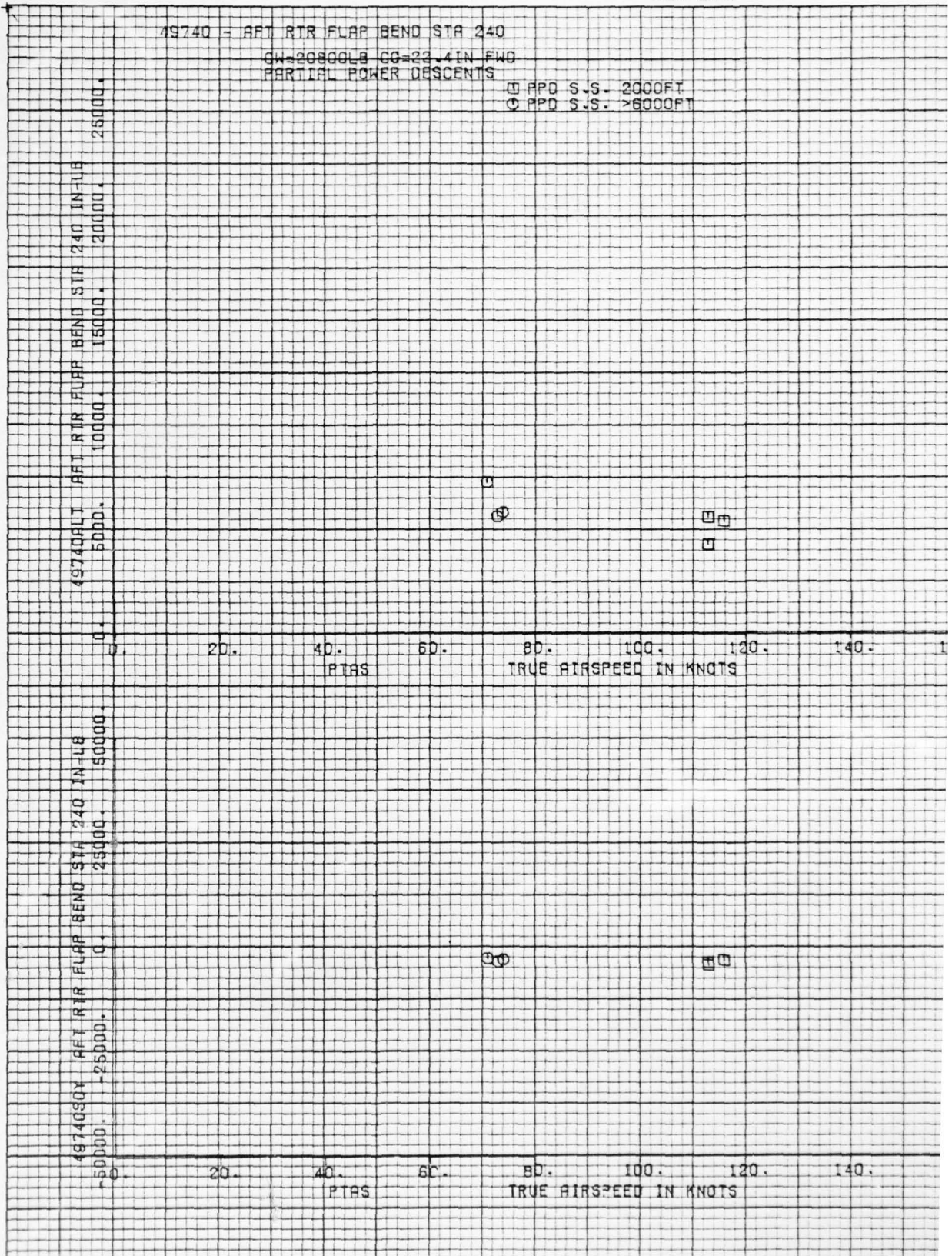
 0. 20. 40. 60. 80. 100. 120. 140. 160.
 PTAS TRUE AIRSPEED IN KNOTS

 49740SOY AFT RTR FLAP BEND STA 240 IN-LB
 50000.
 25000.
 0.
 -25000.
 -50000.

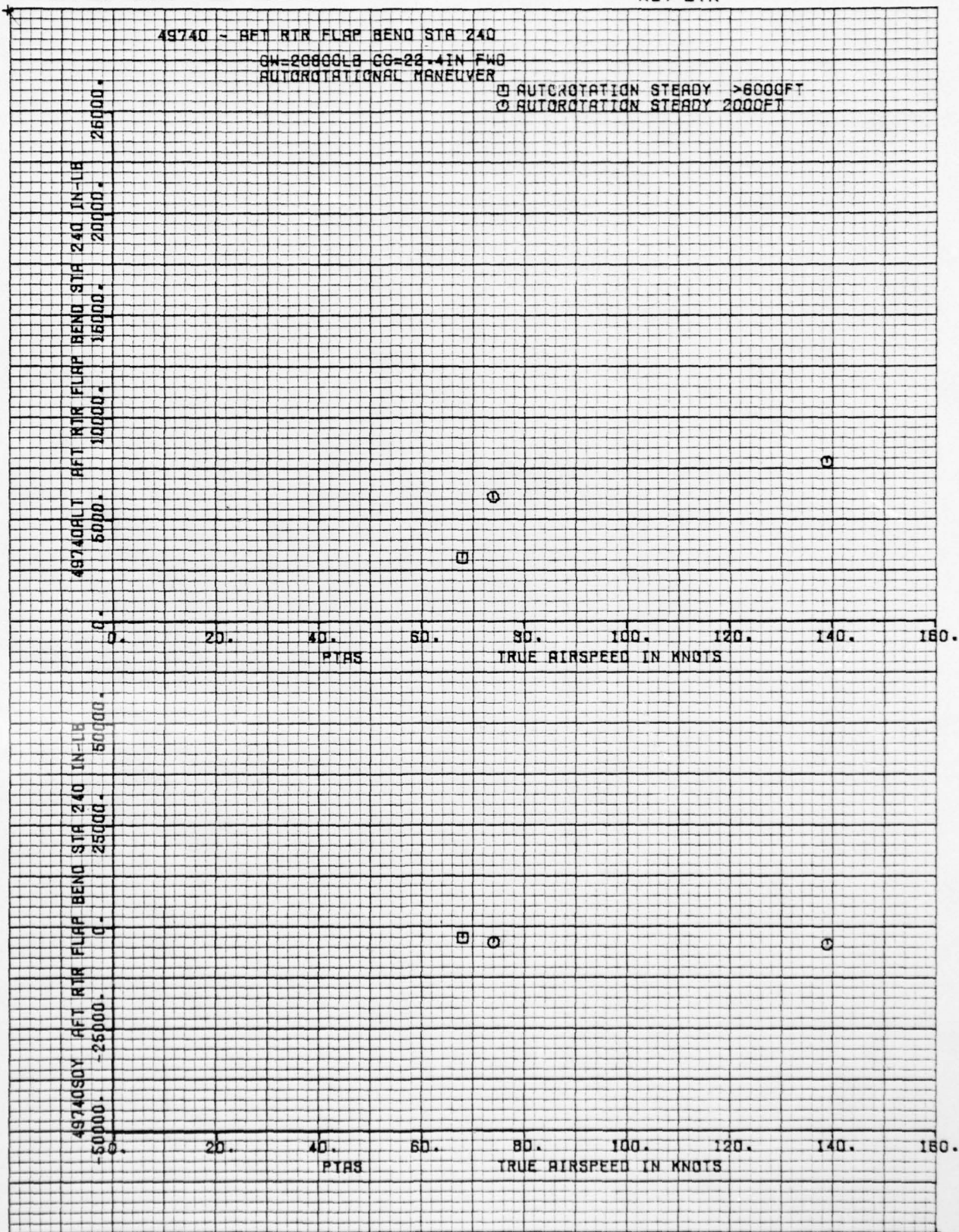
 0. 20. 40. 60. 80. 100. 120. 140. 160.
 PTAS TRUE AIRSPEED IN KNOTS

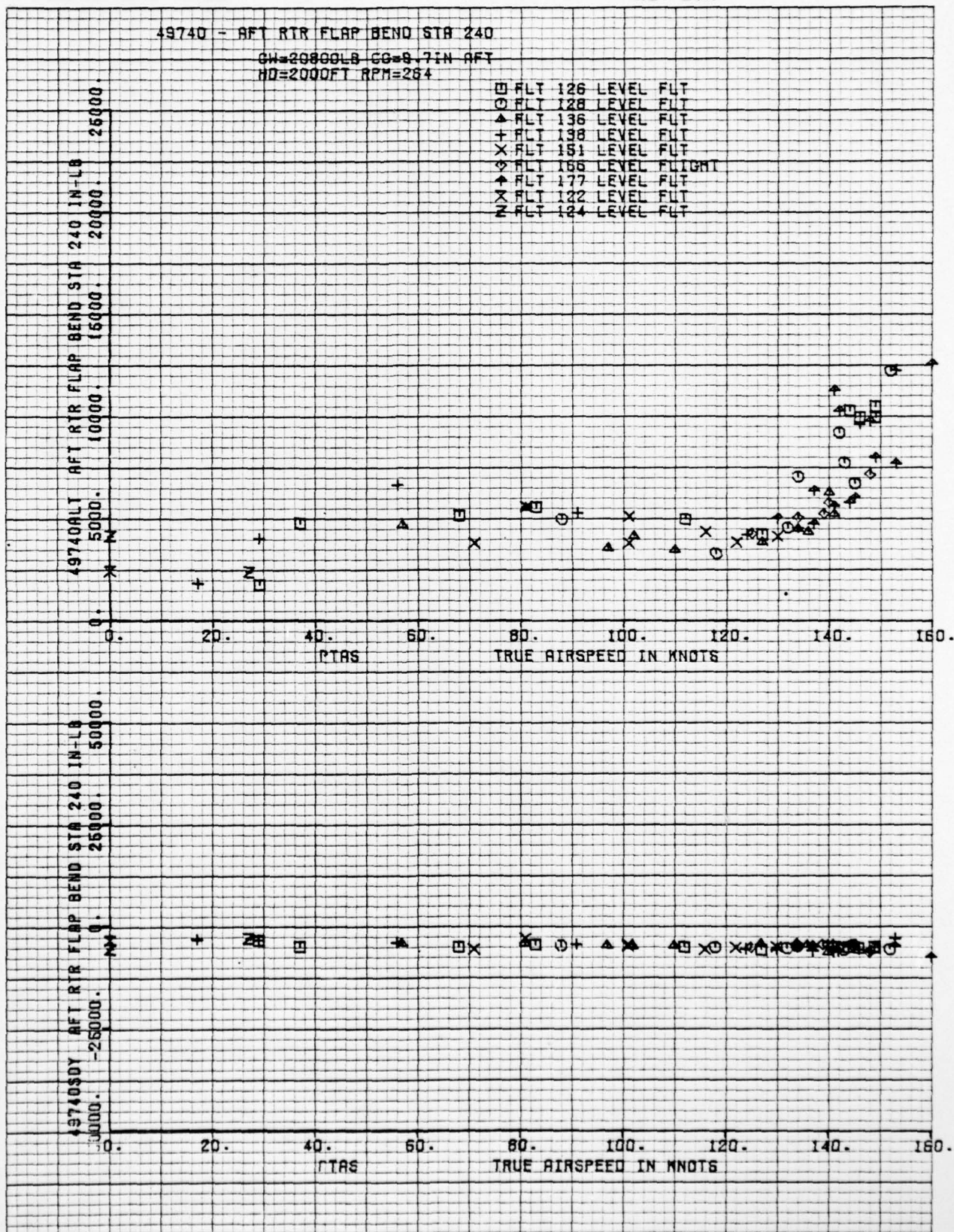
THE **BOEING** COMPANY

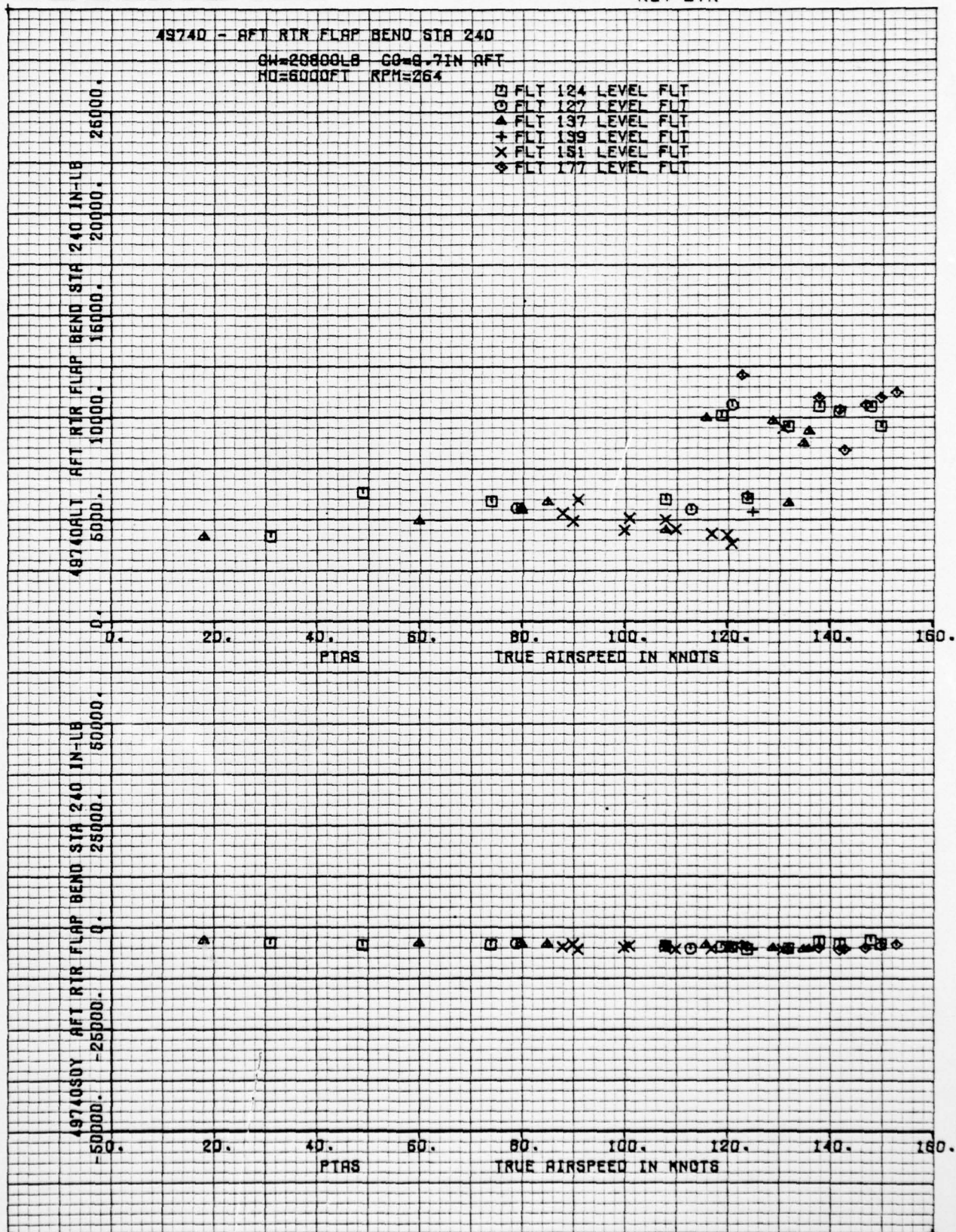
D210-1116E-3
NUMBER 1 VOLUME 4
REV LTR



FORM 52300 (10/71)

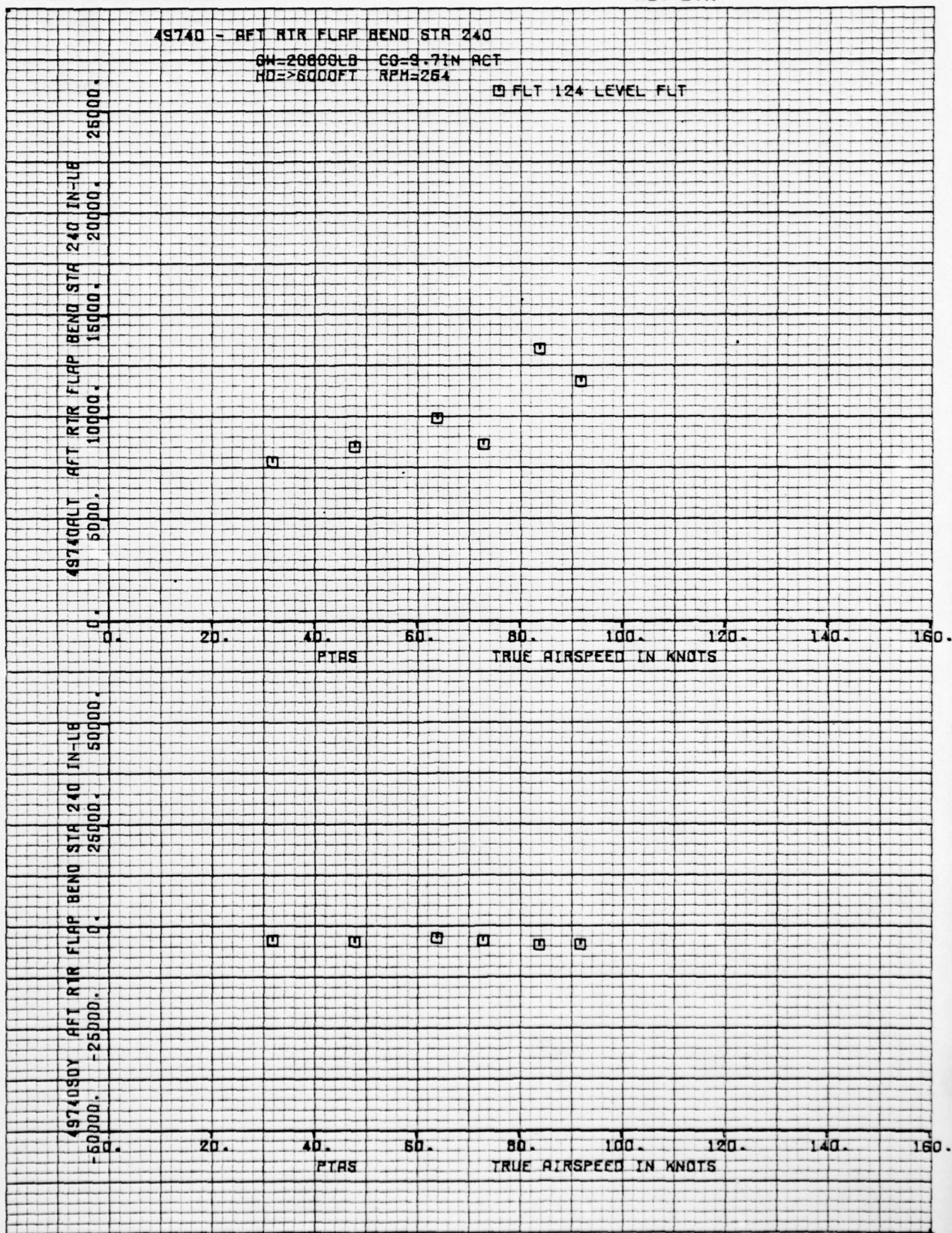






THE **BOEING** COMPANY

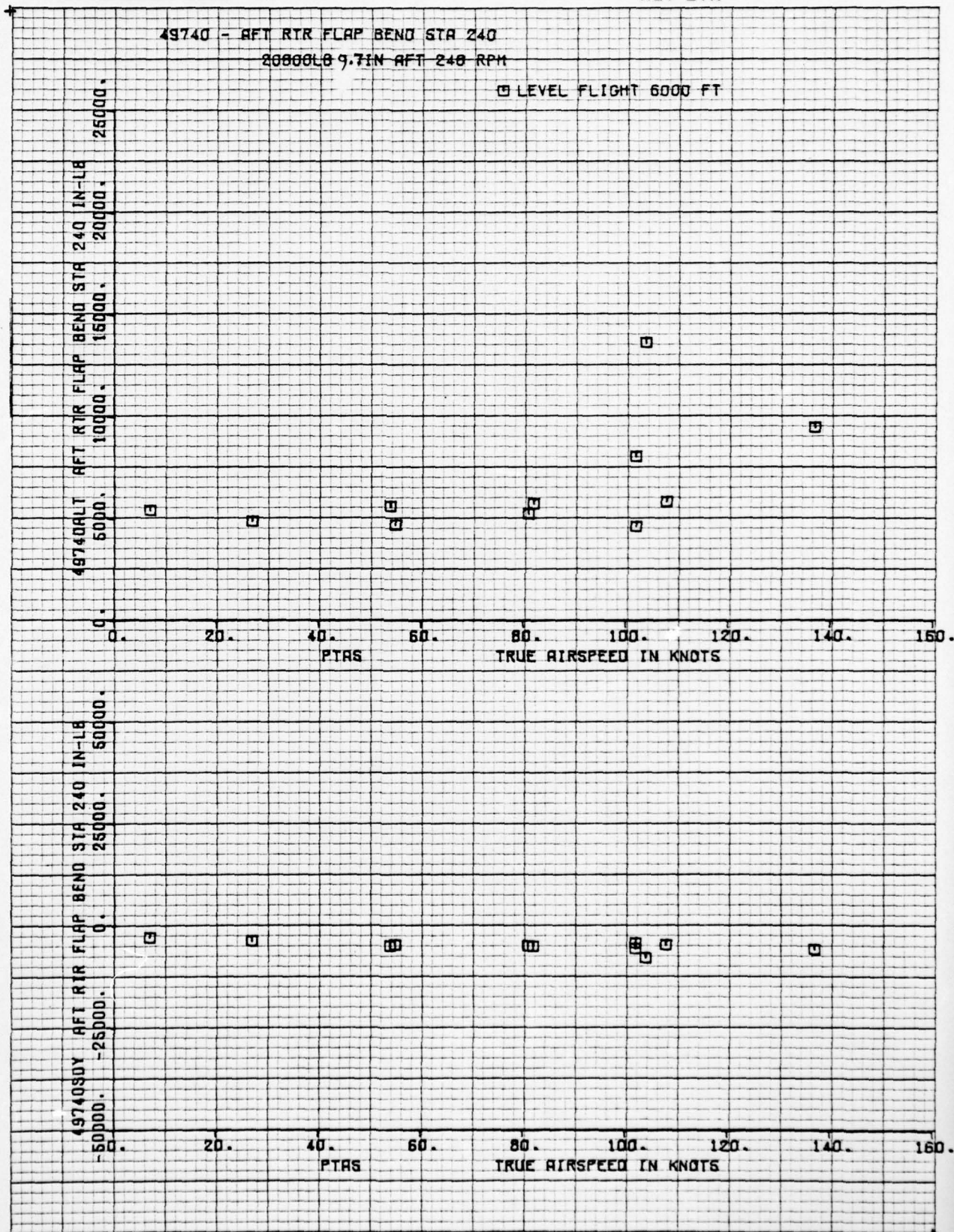
D210-11168-3
NUMBER **VOLUME 4**
REV LTR



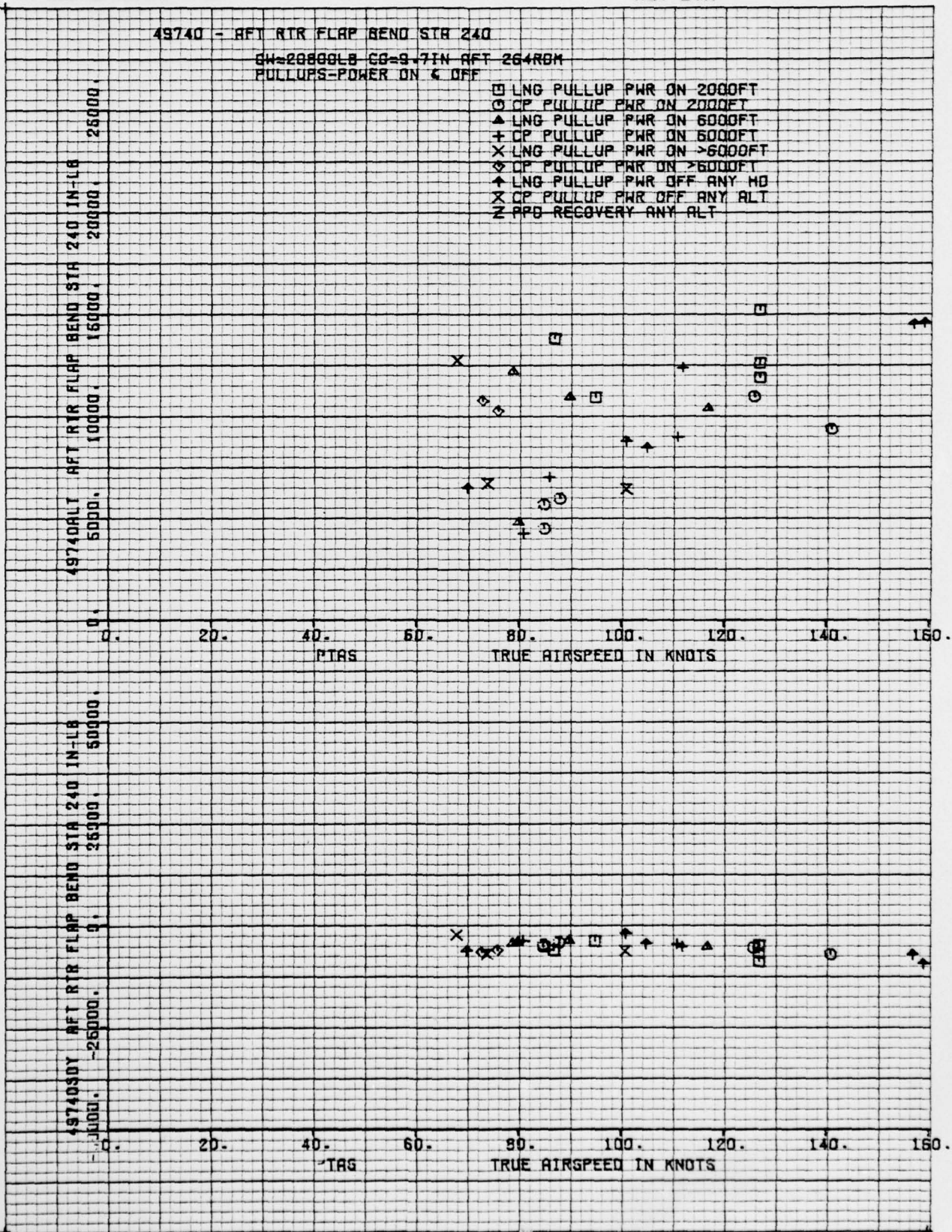
D210-11168-3

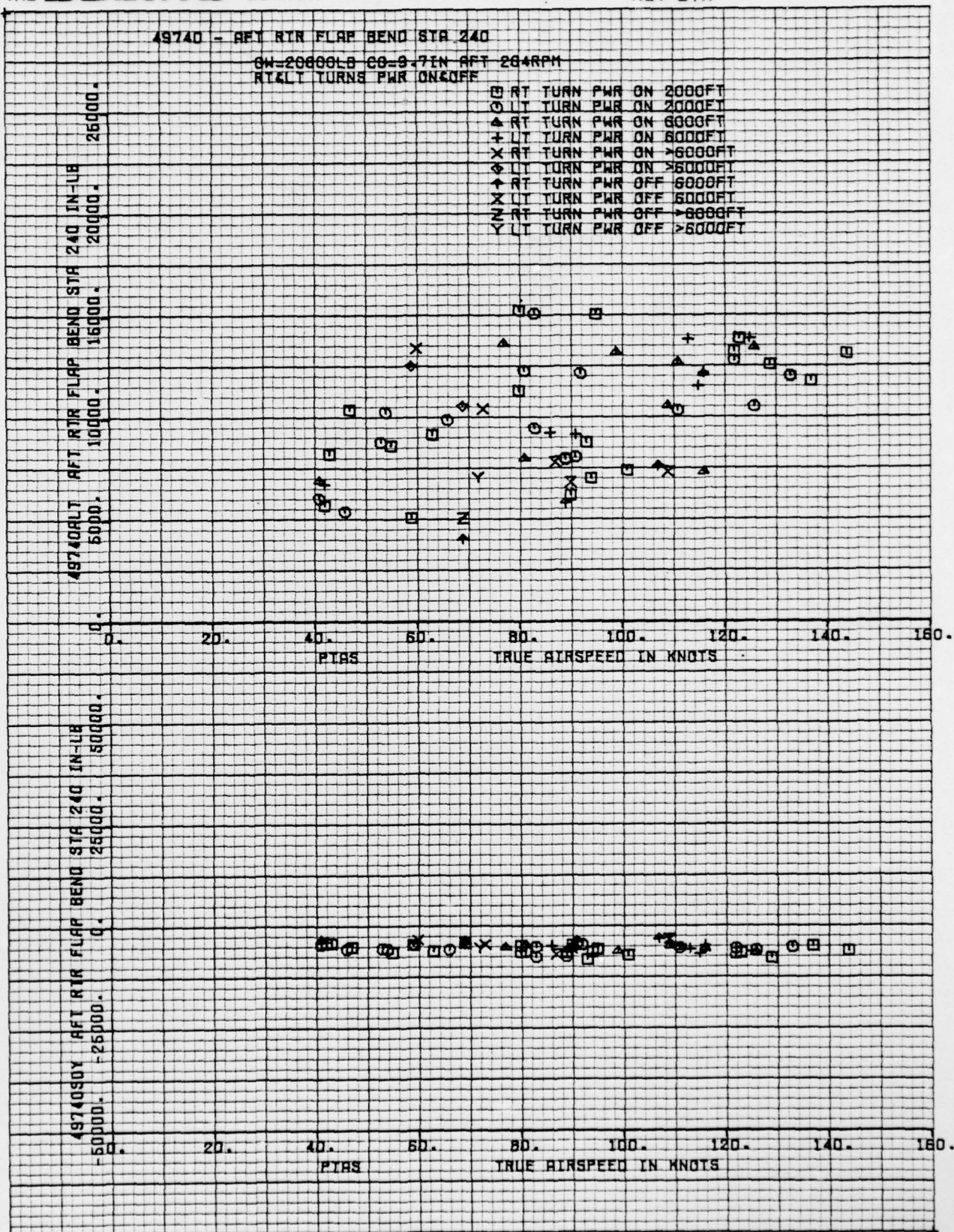
NUMBER VOLUME 4
REV LTR

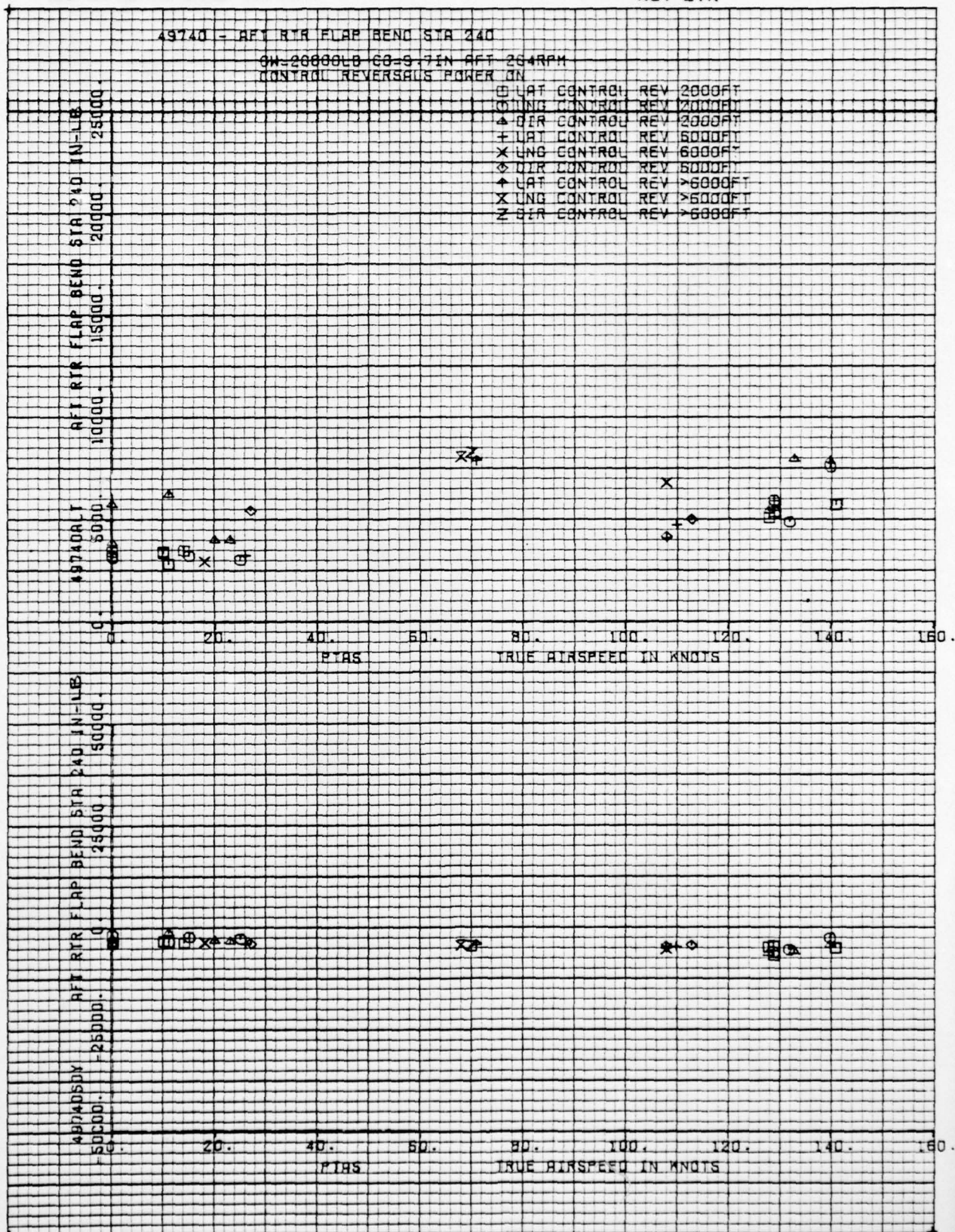
THE **BOEING** COMPANY

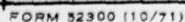


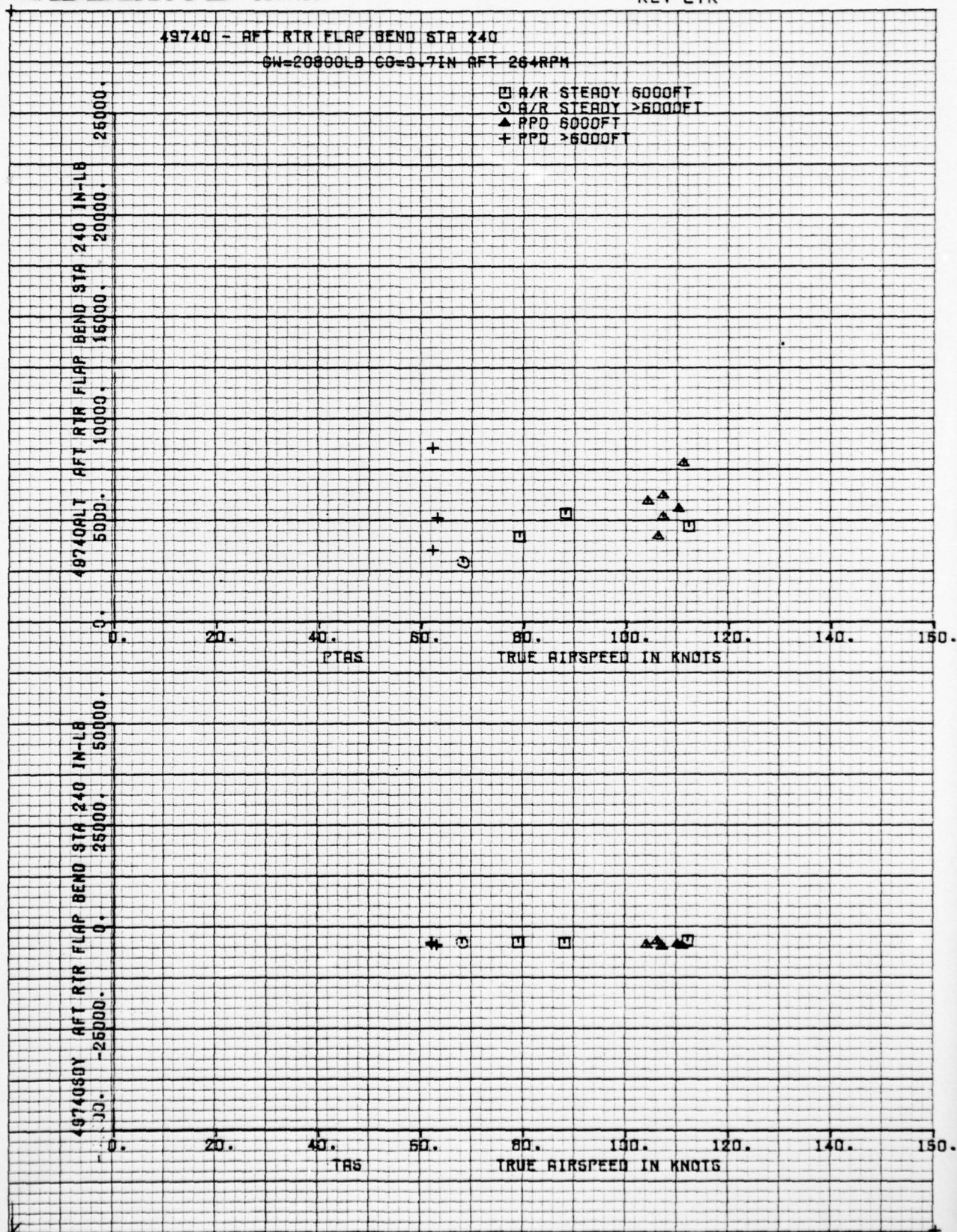
FORM 52300 (10/71)

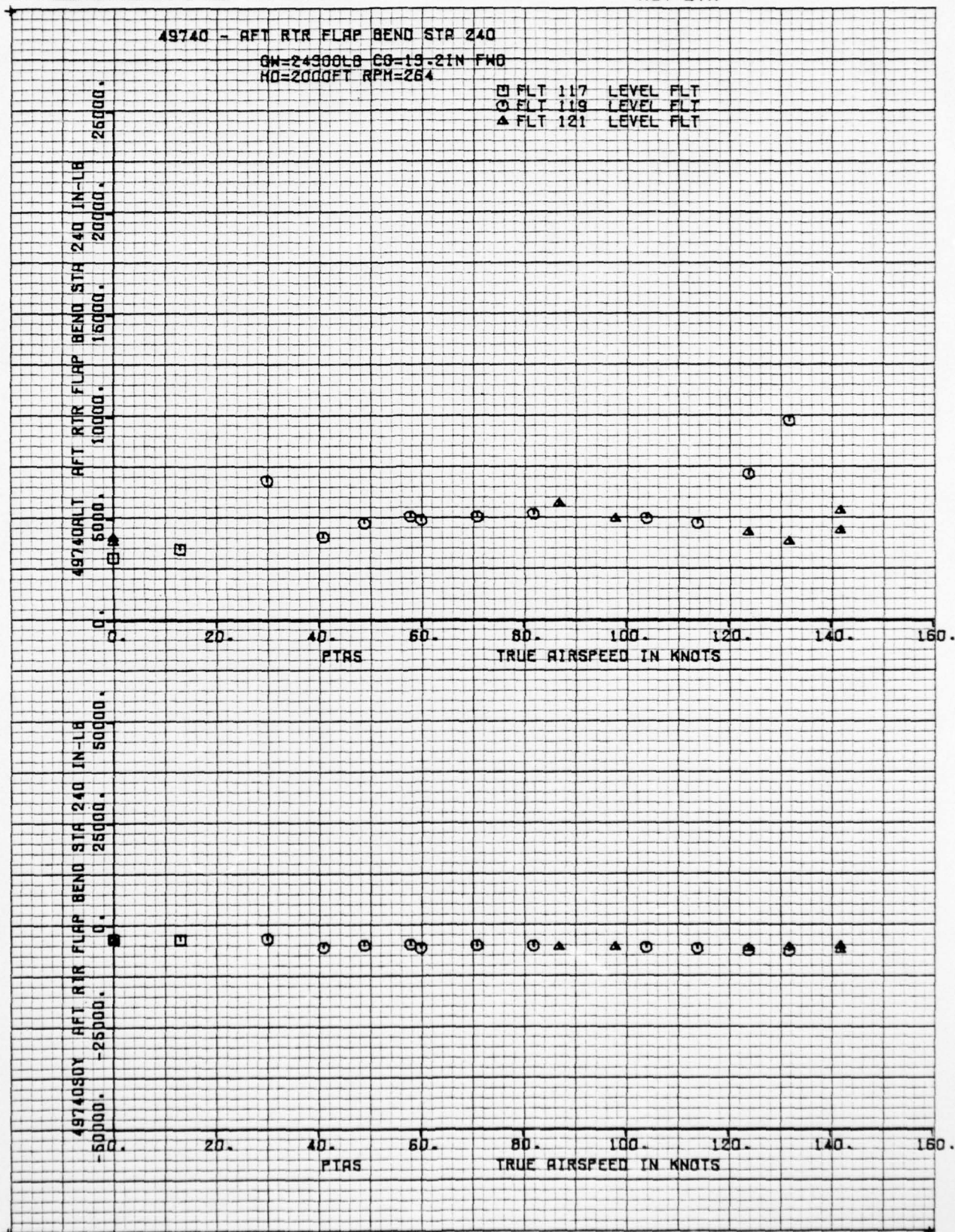


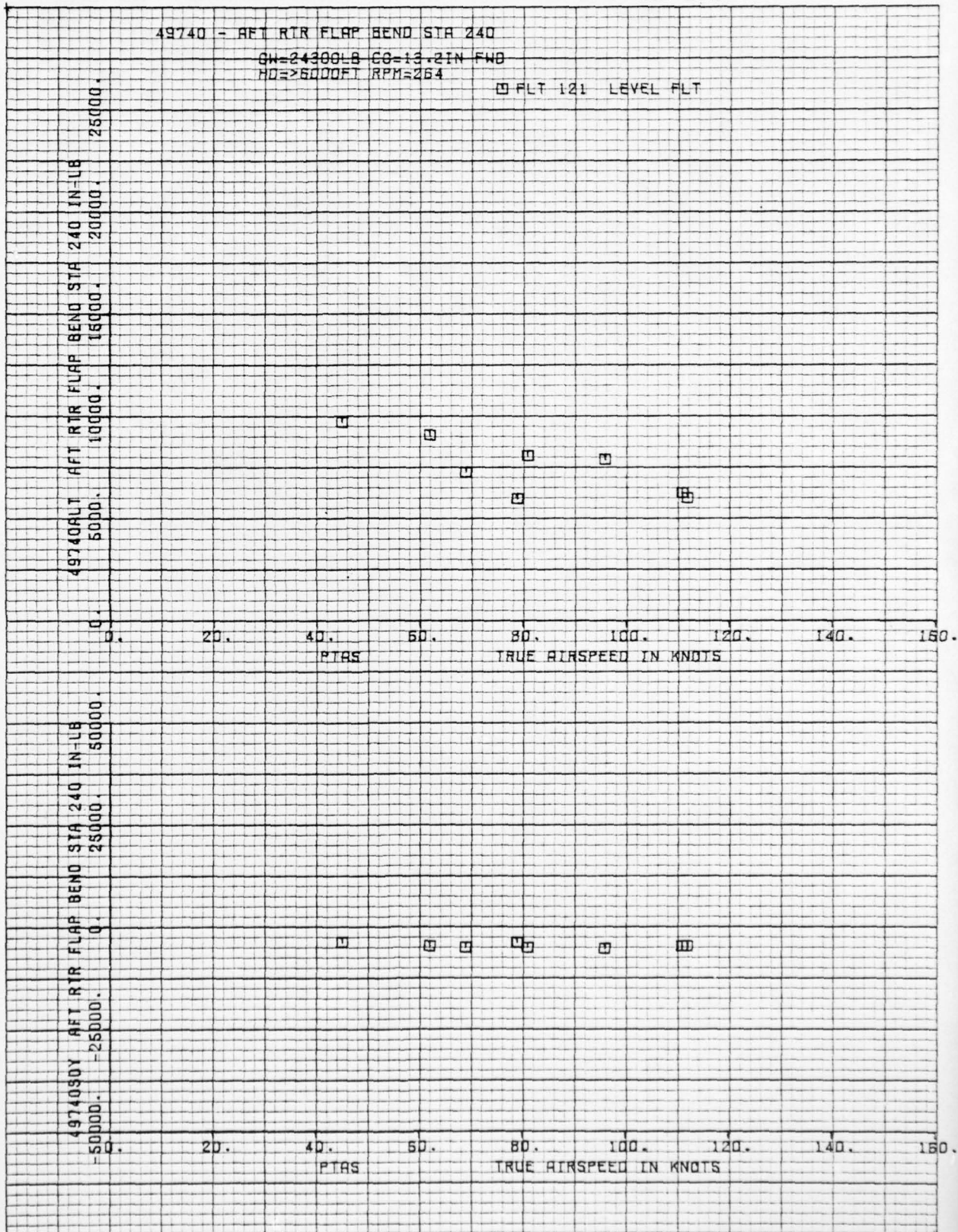


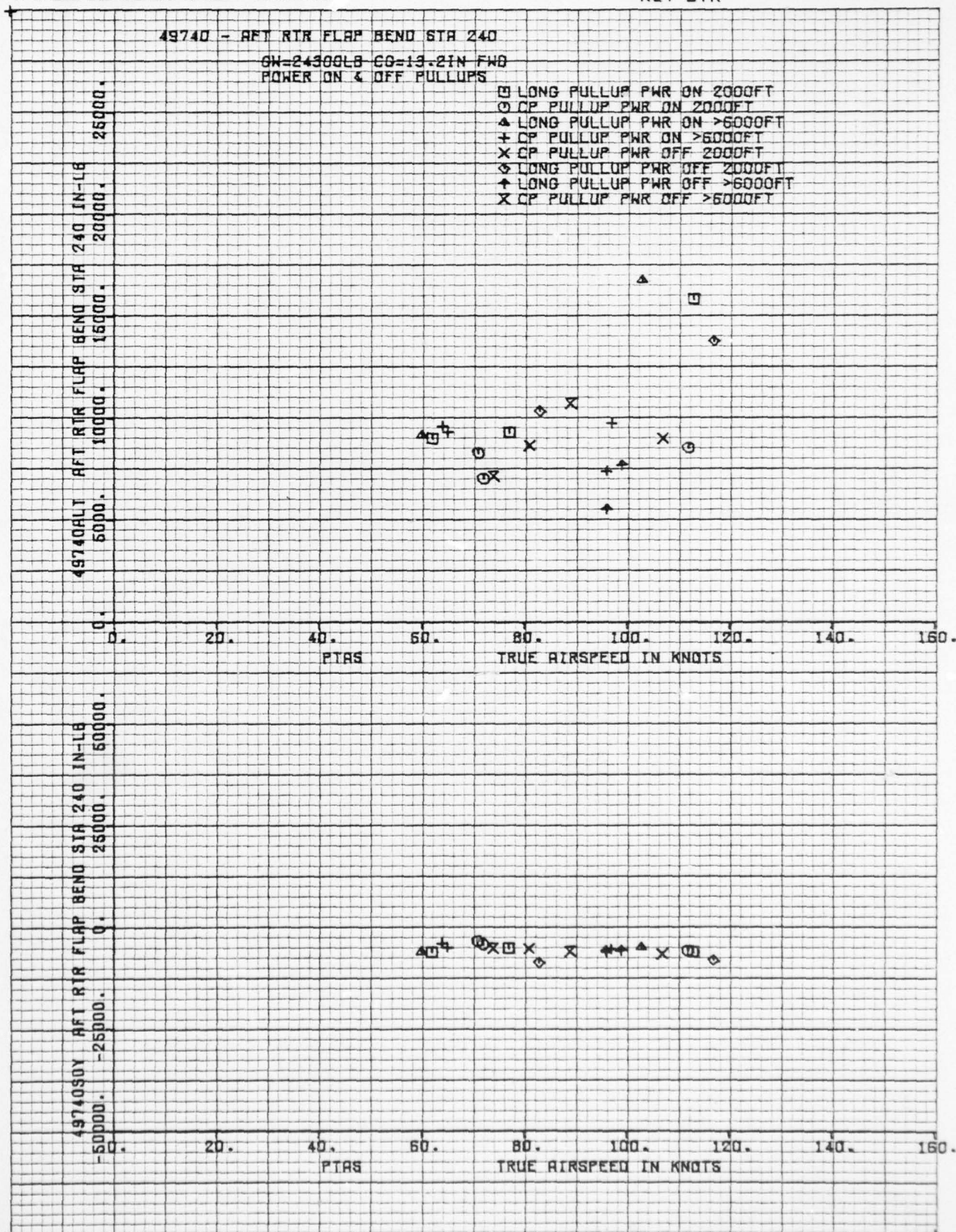
THE **BOEING** COMPANY



THE **BOEING** COMPANY







AD-A075 613

BOEING VERTOL CO PHILADELPHIA PA
CH-46 COMPOSITE ROTOR BLADE FLIGHT STRESS SURVEY DATA. VOLUME I--ETC(U)
1978 R AIELLO, J BEND
D210-11168-3-VOL-4

F/6 1/3

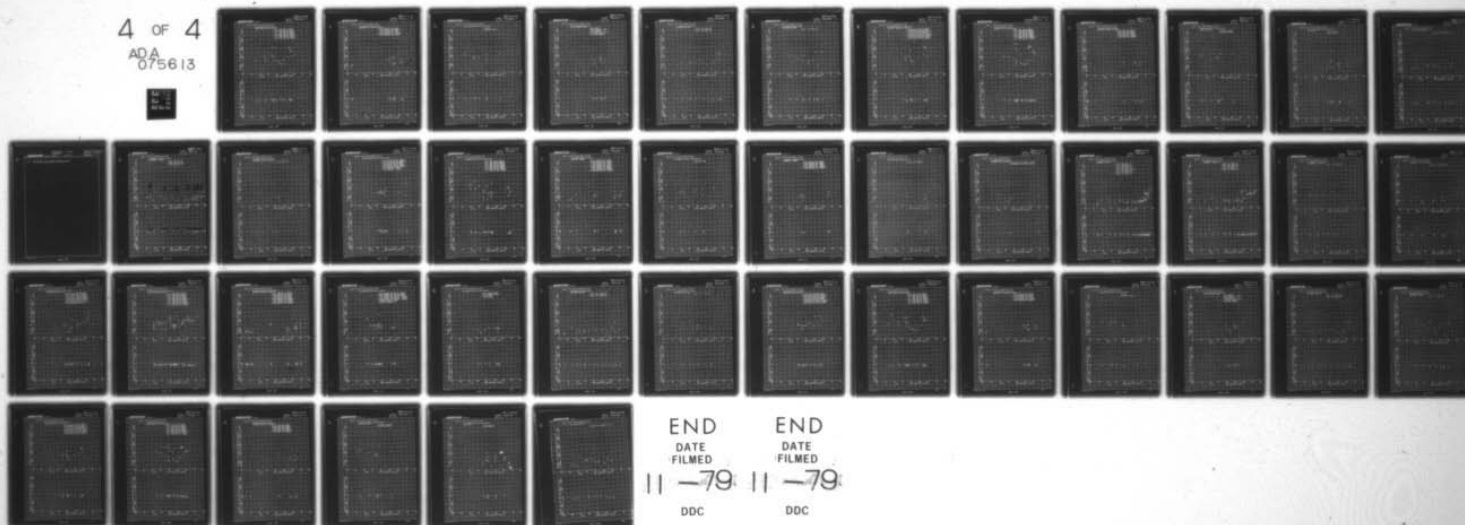
N00019-75-C-0396

NL

UNCLASSIFIED

4 OF 4

ADA
075613



END

DATE
FILMED

11 -79

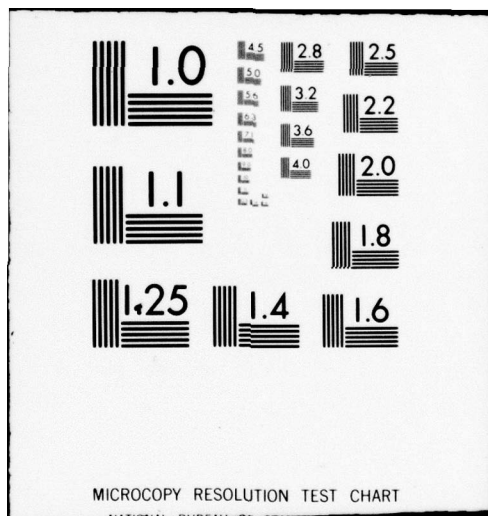
DDC

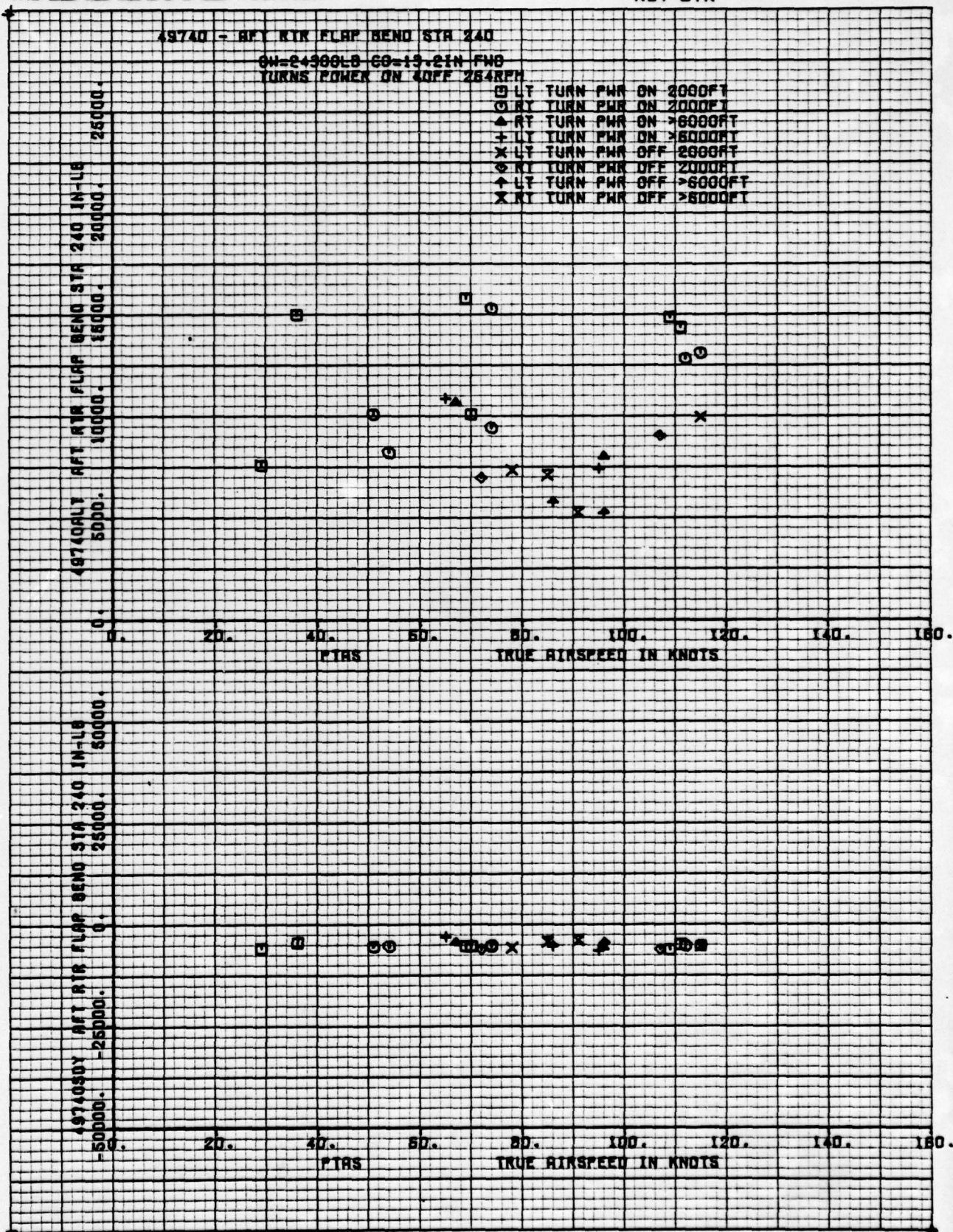
END

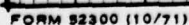
DATE
FILMED

11 -79

DDC

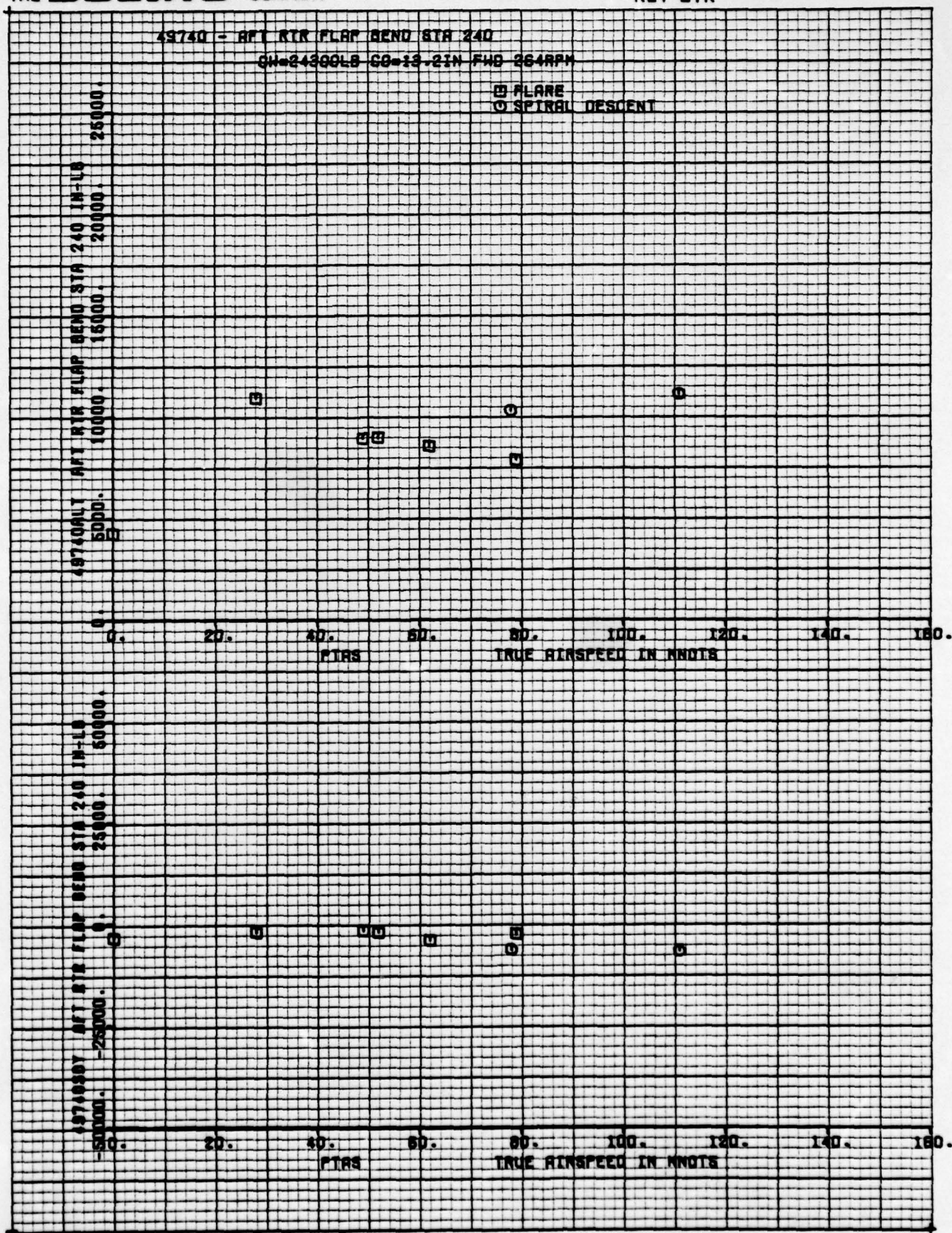


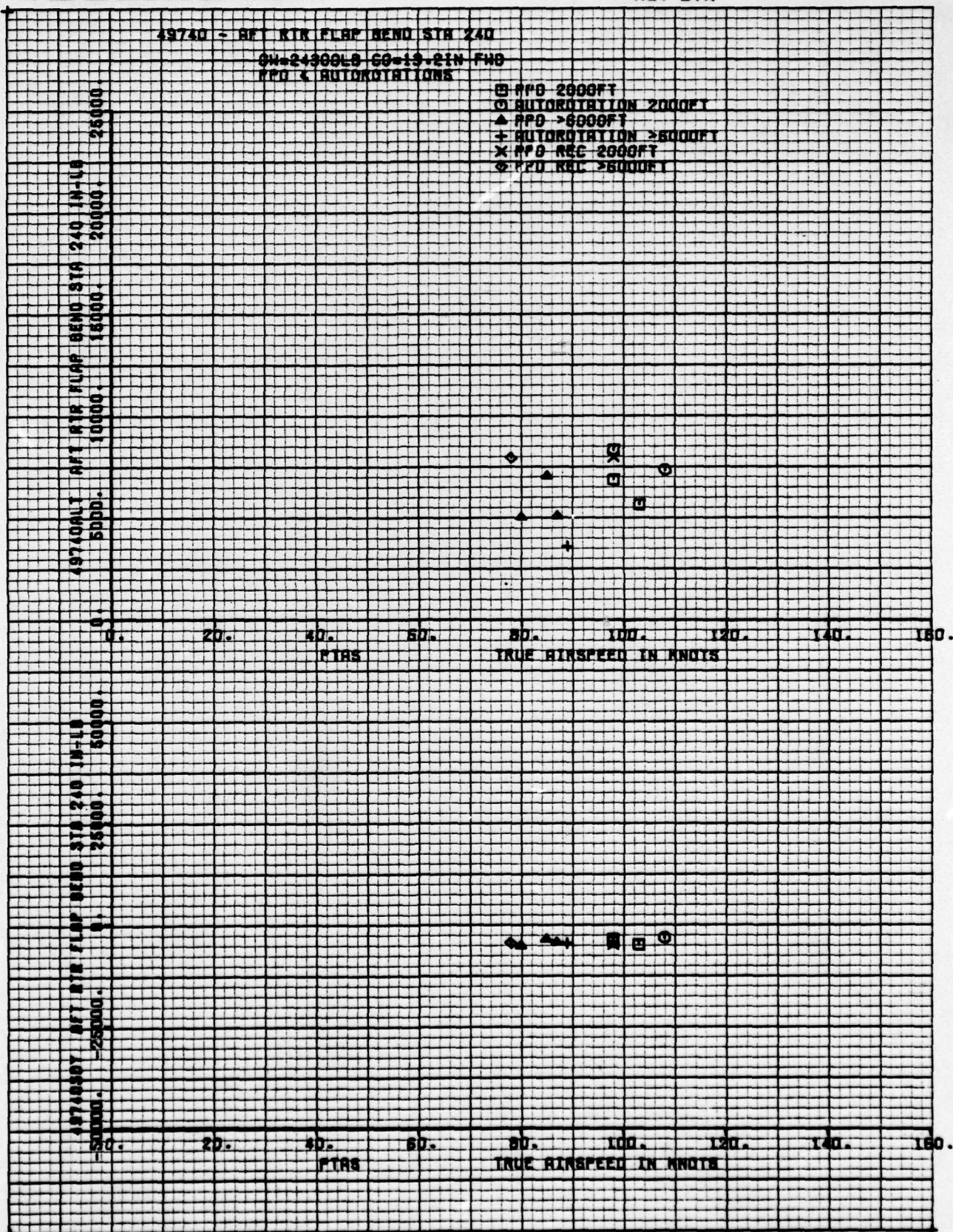
THE **BOEING** COMPANY



THE **BOEING** COMPANY

NUMBER **D210-11168-3**
REV LTR **VOLUME 4**

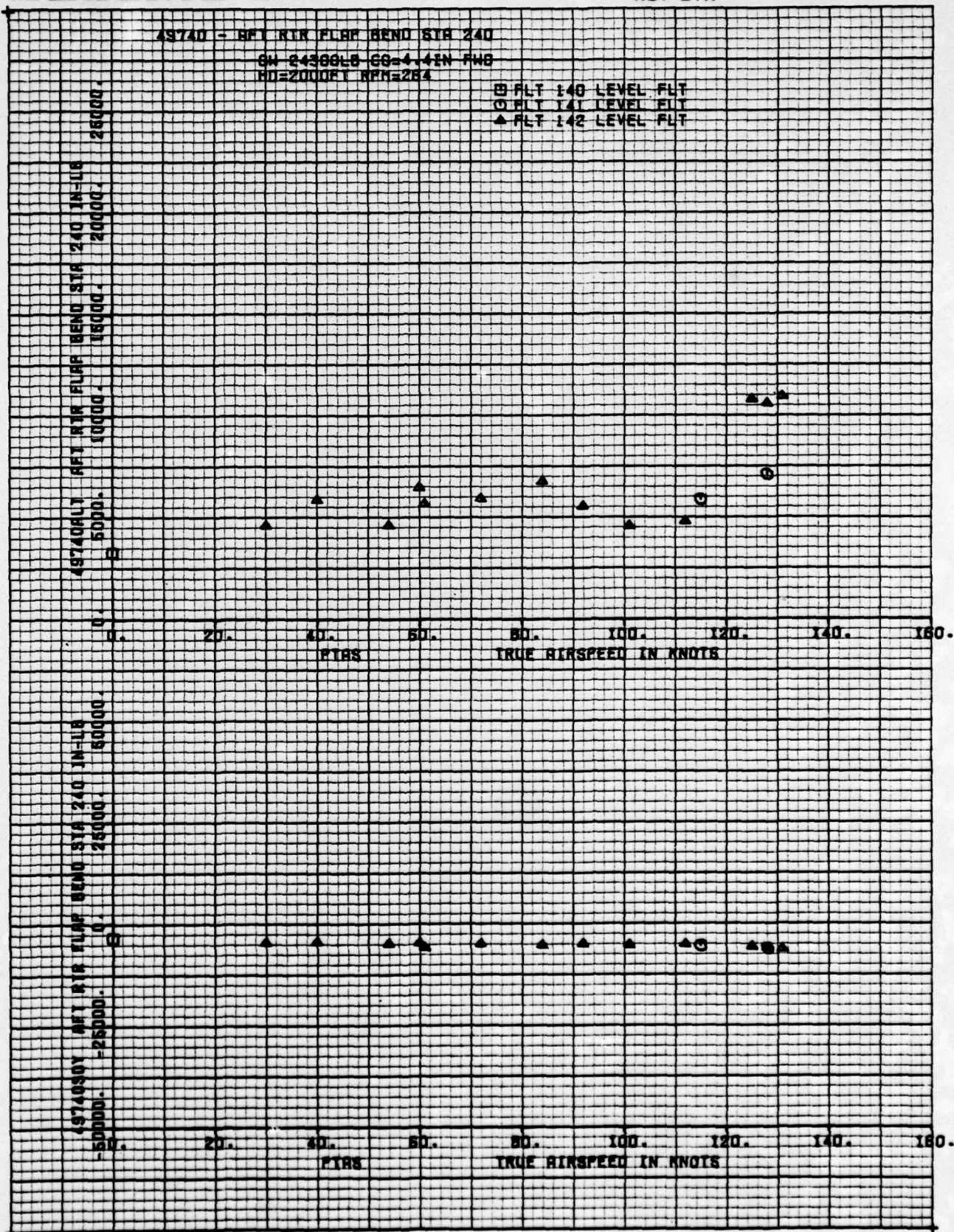




THE **BOEING** COMPANY

D210-11168-3

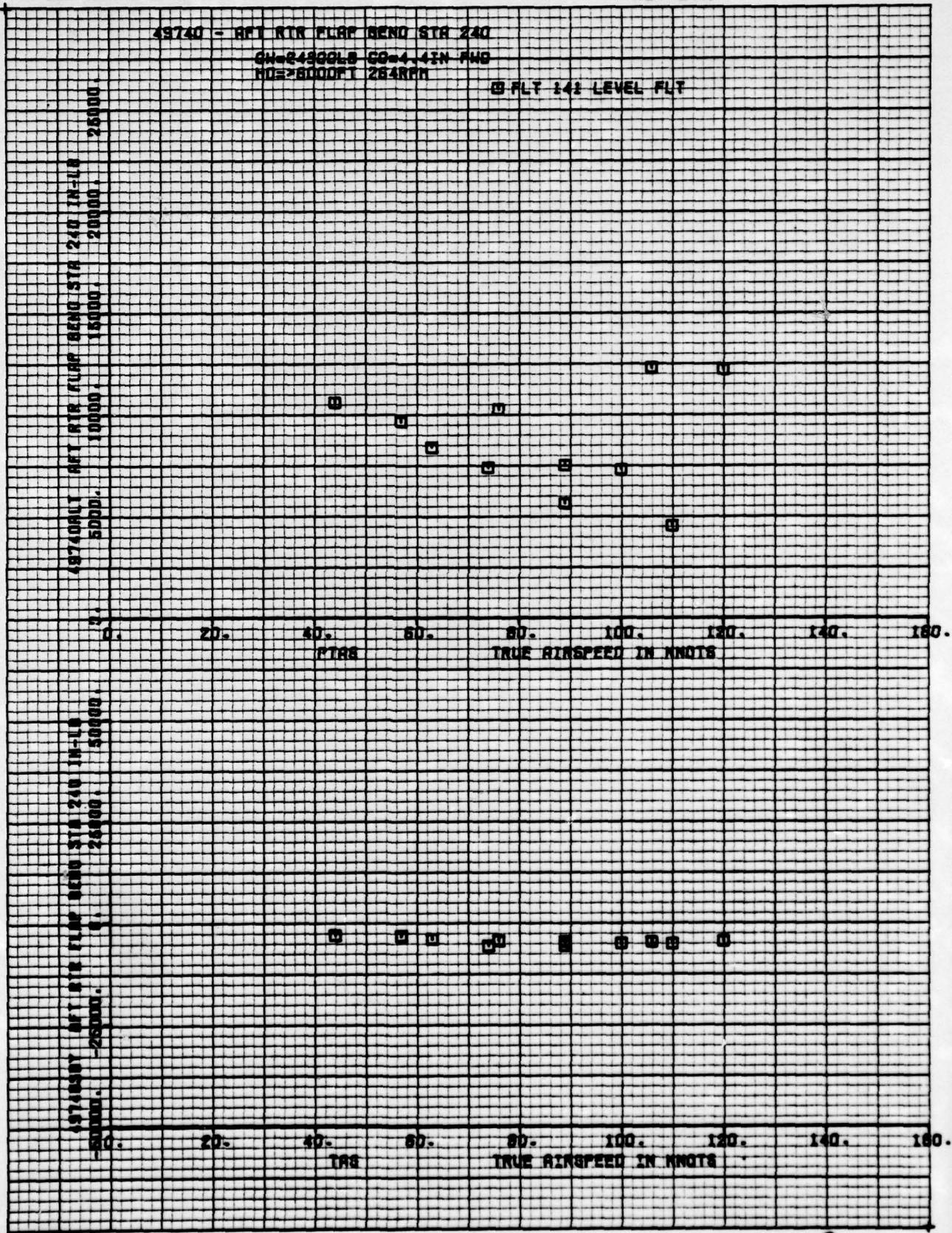
NUMBER: **VOLUME 4**
REV LTR

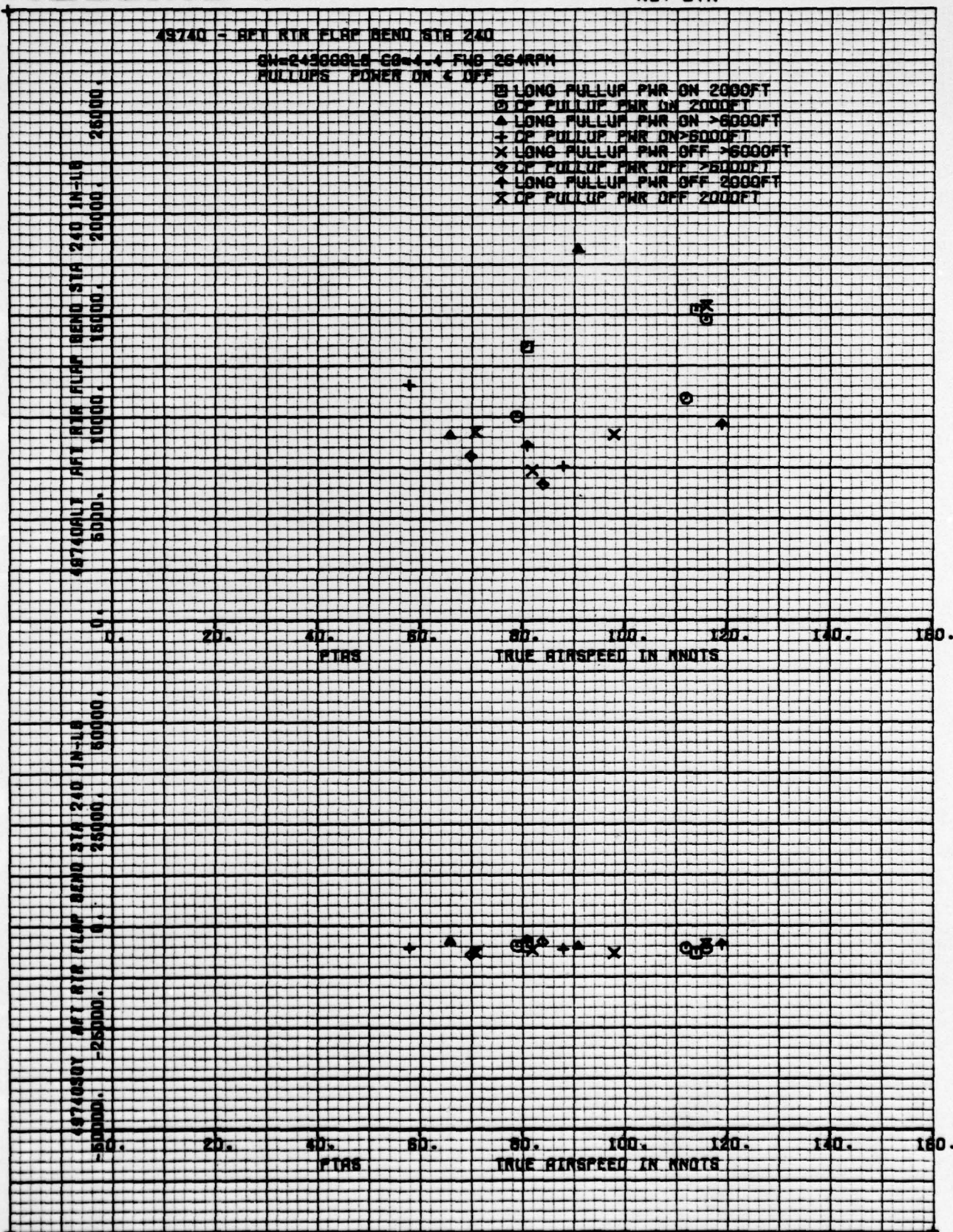


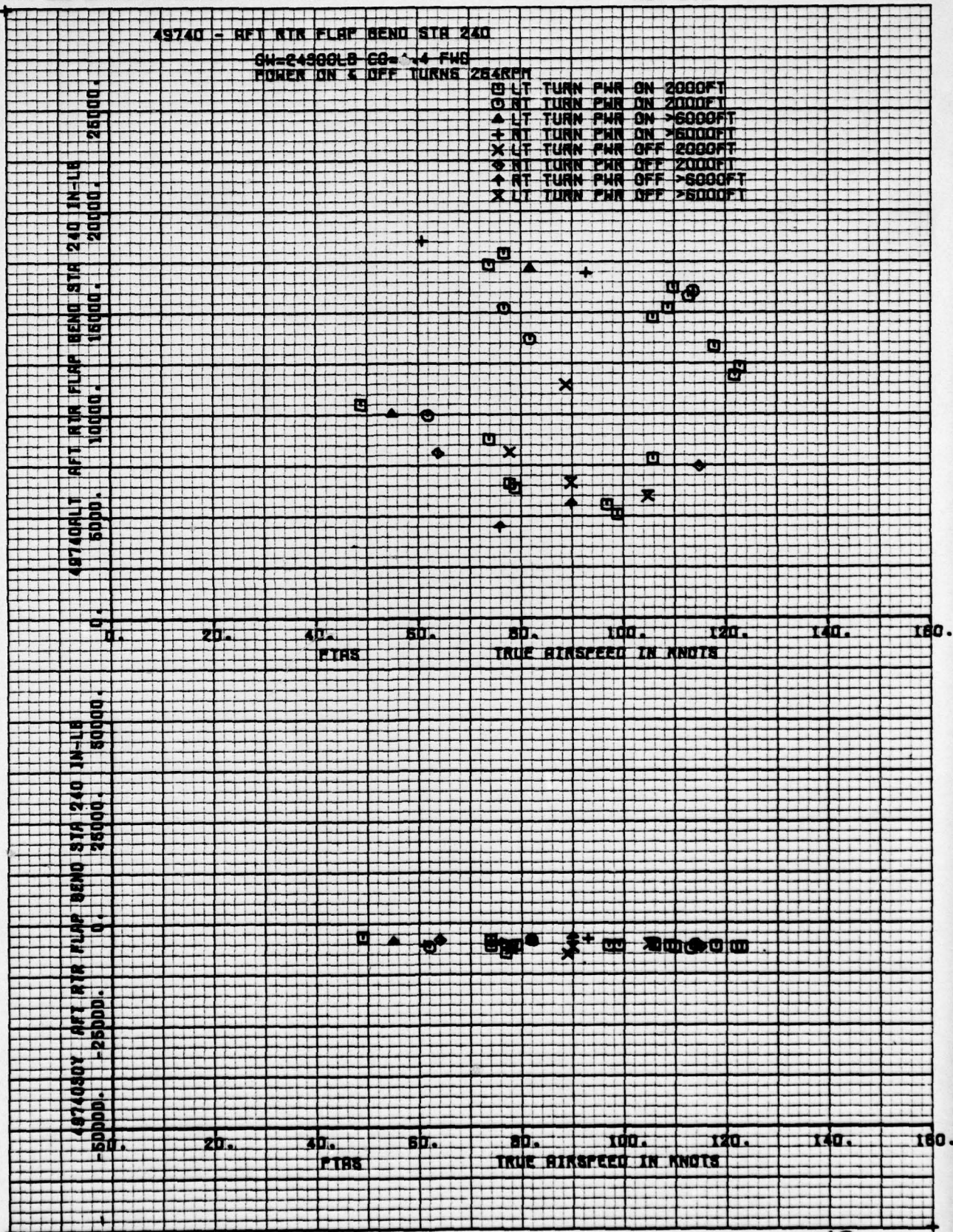
FORM 52300 (10/71)

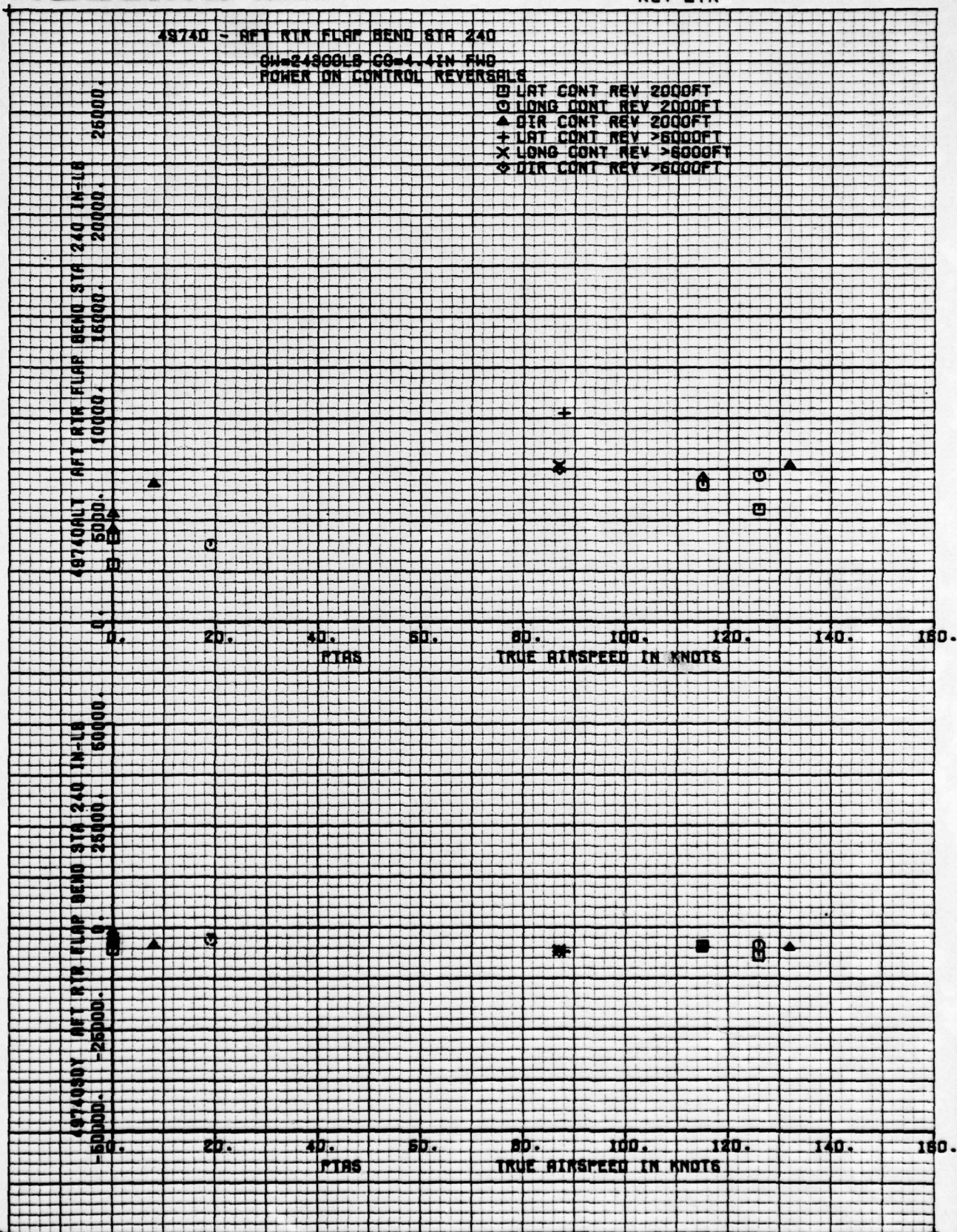
THE **BOEING** COMPANY

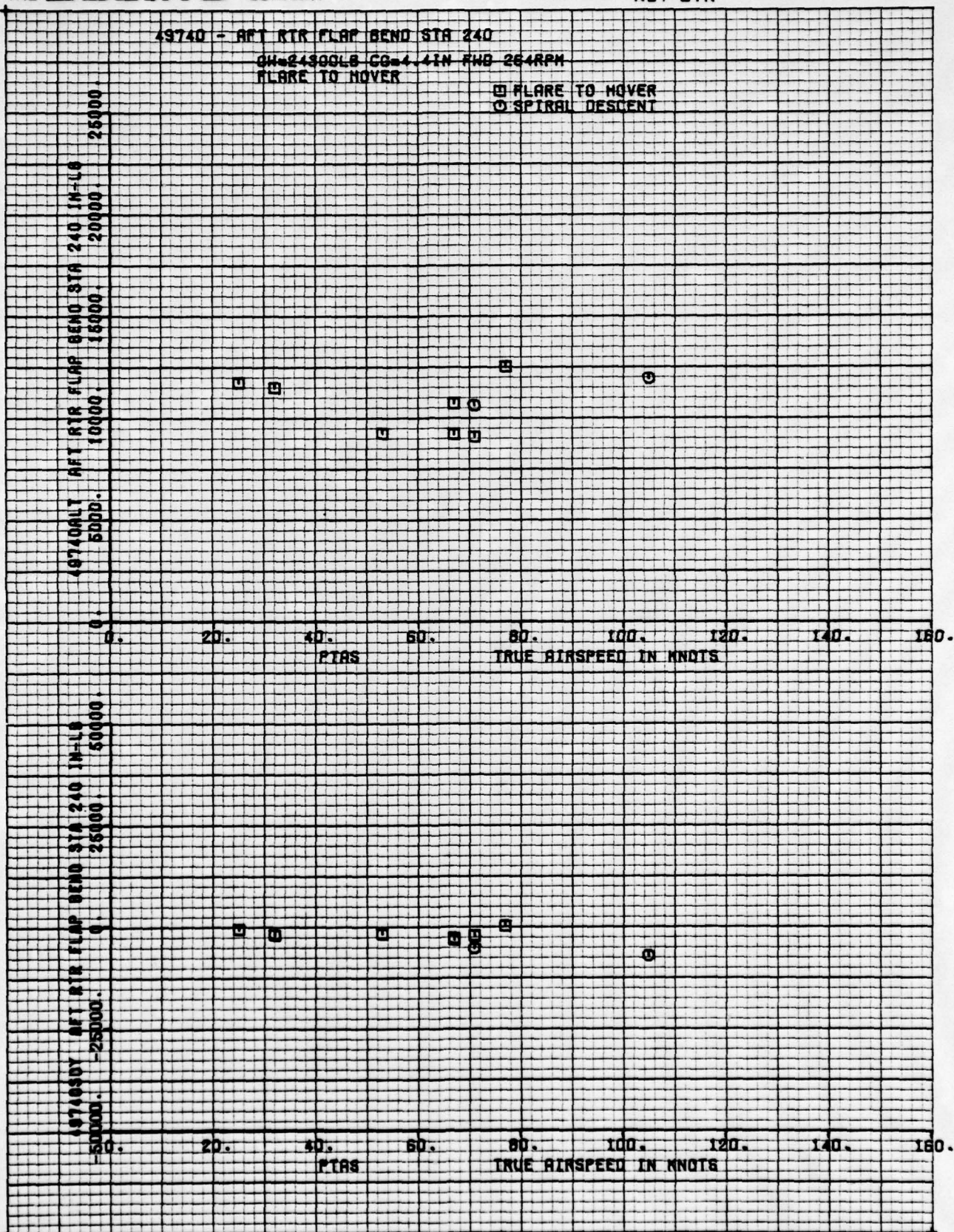
D210-11168-3
 NUMBER VOLUME 4
 REV LTR







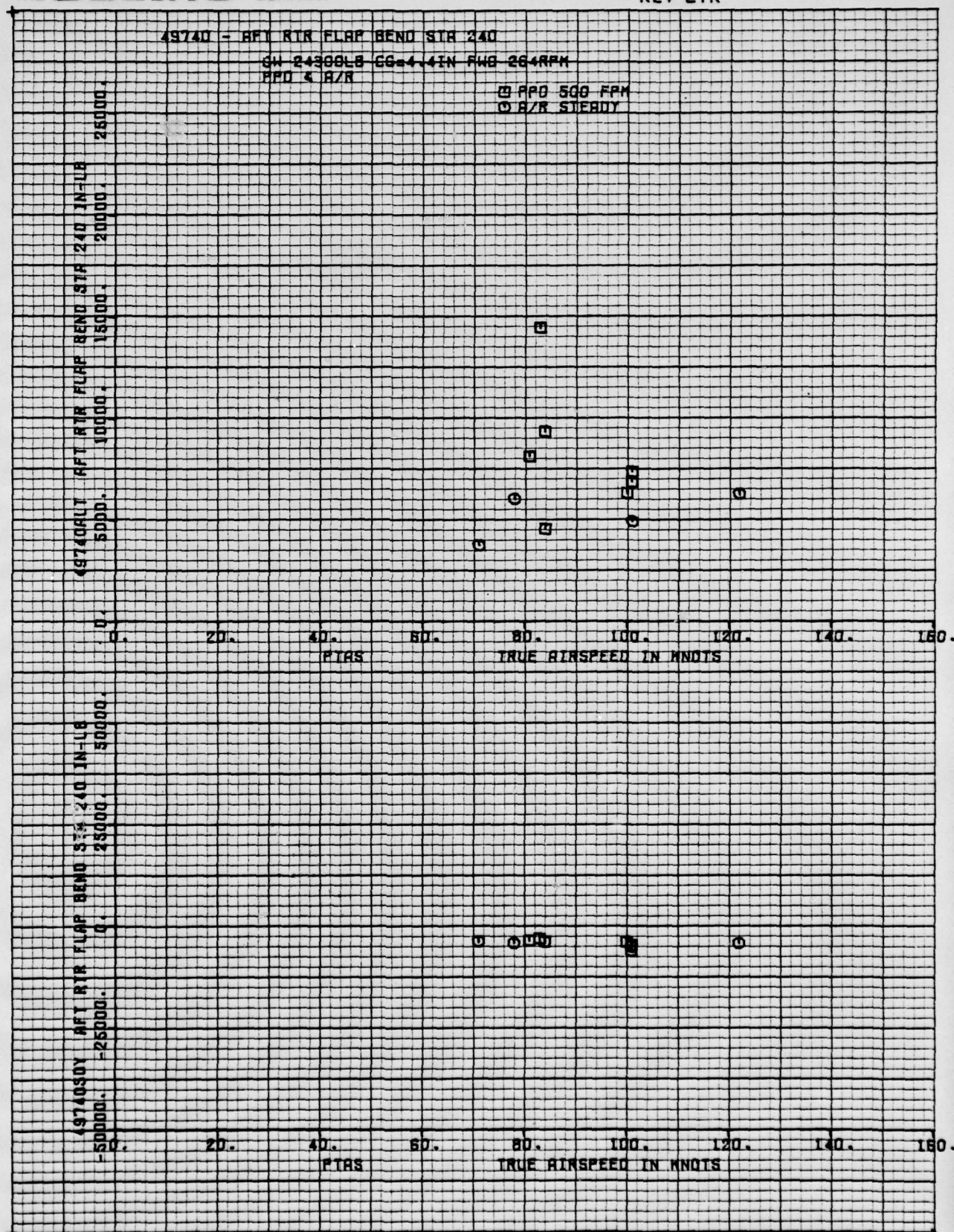




D210-11168-3

NUMBER VOLUME 4
REV LTR

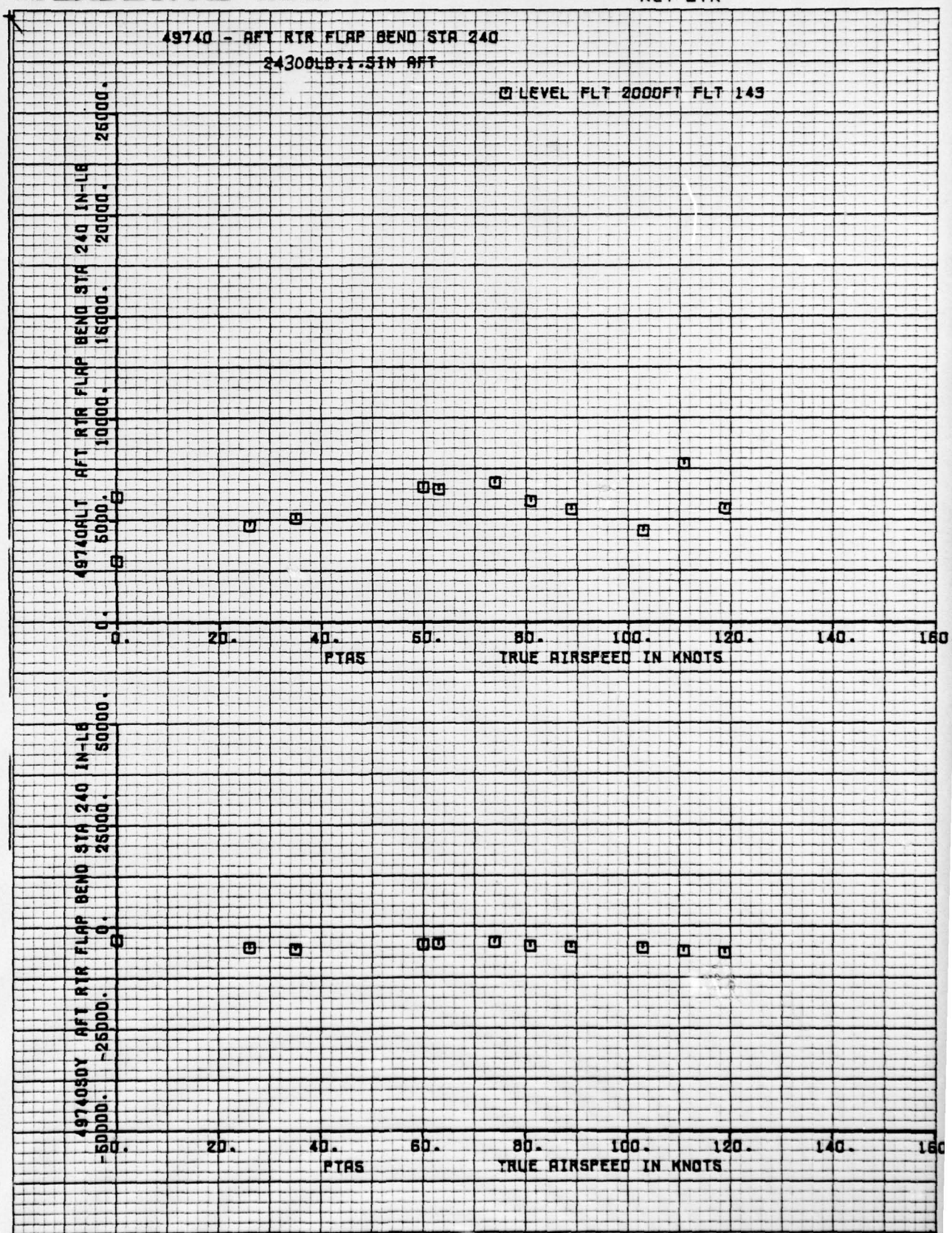
THE **BOEING** COMPANY



D210-11168-3

NUMBER **VOLUME 4**
REV LTR

THE **BOEING** COMPANY

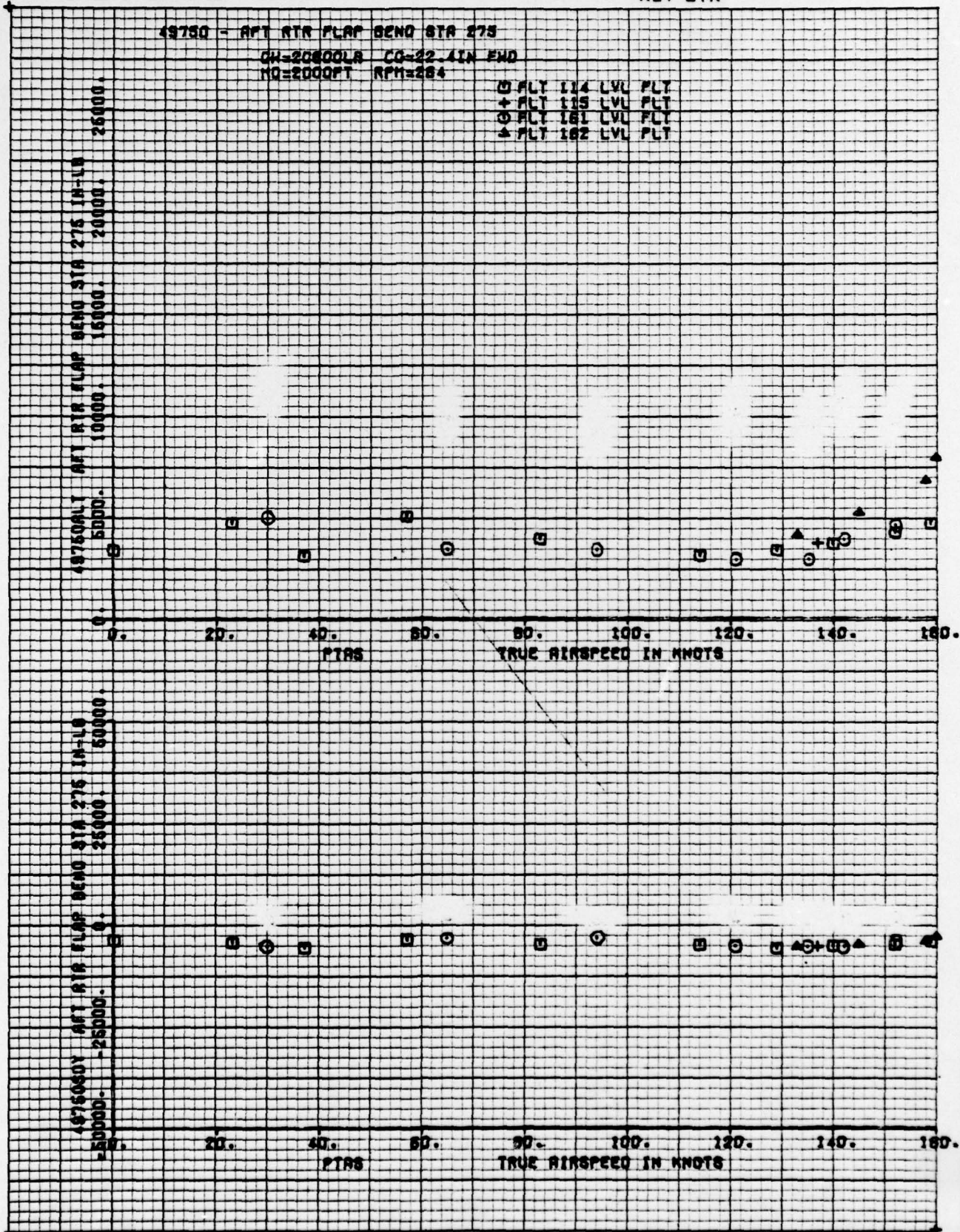


THE **BOEING** COMPANY

PREPARED BY: J. Bendo
CHECKED BY:
DATE: 8/28/78

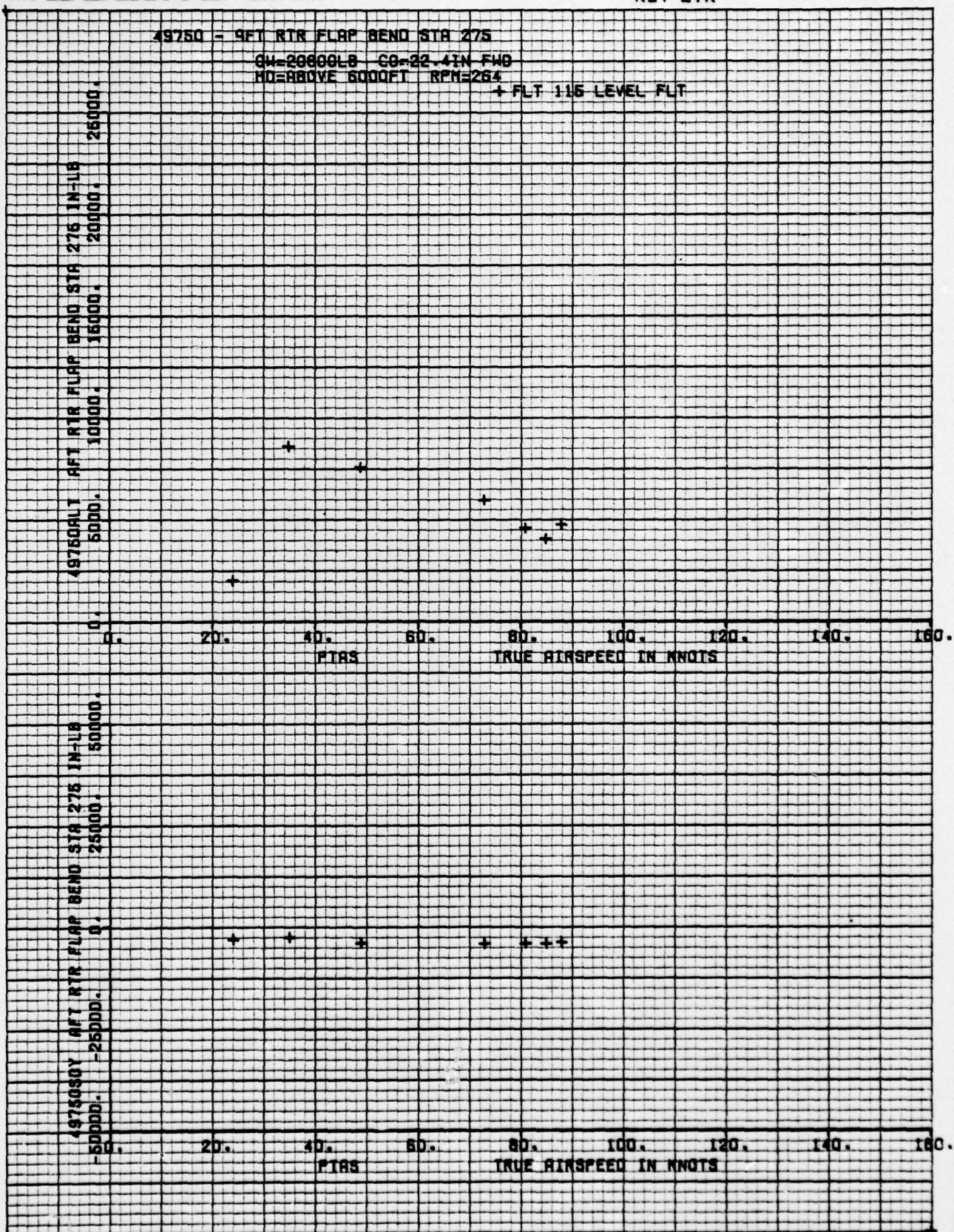
NUMBER D210-11168-3
REV LTR Volume 4
MODEL NO.

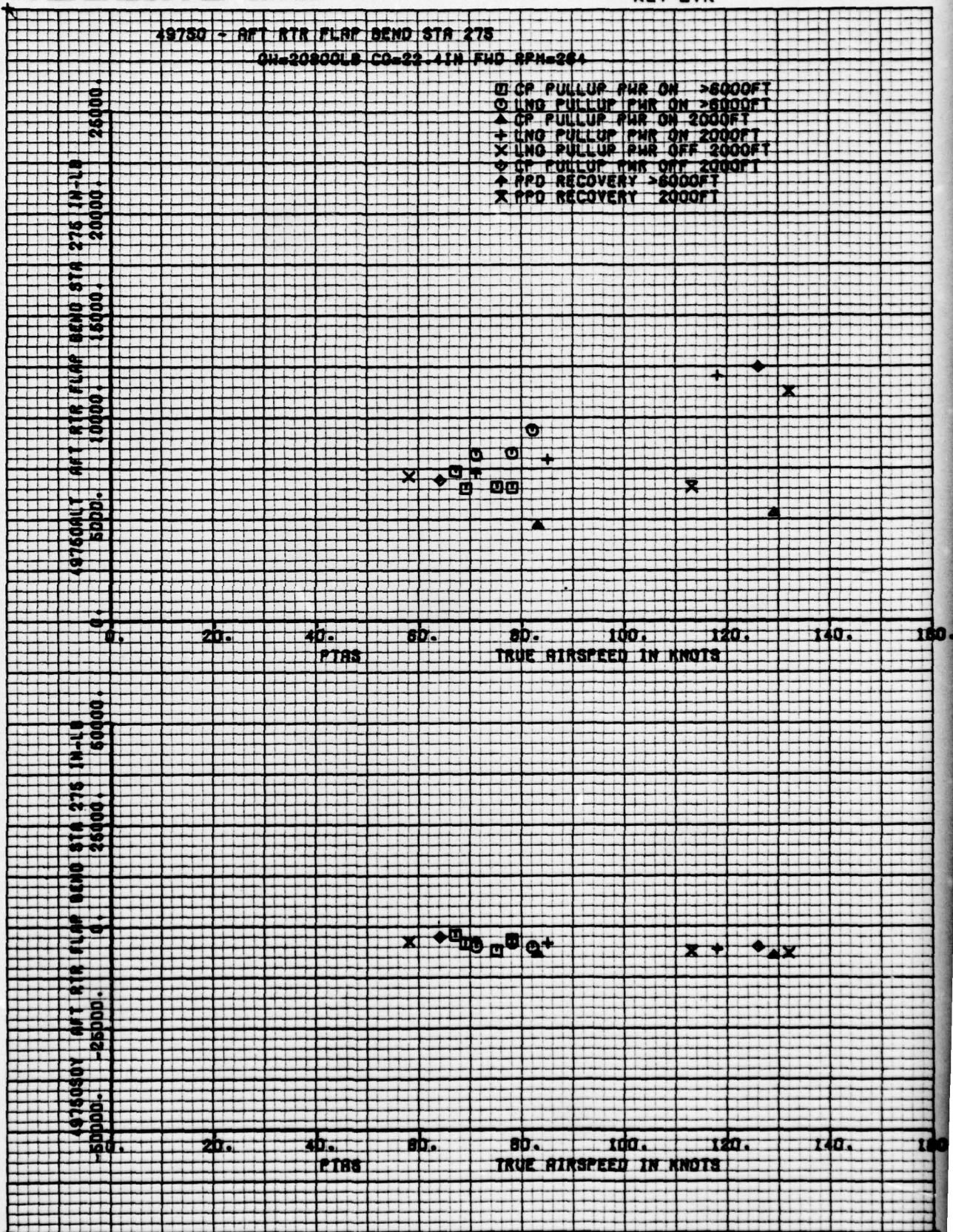
4.9 Aft Blade Flap Bending Station 275.

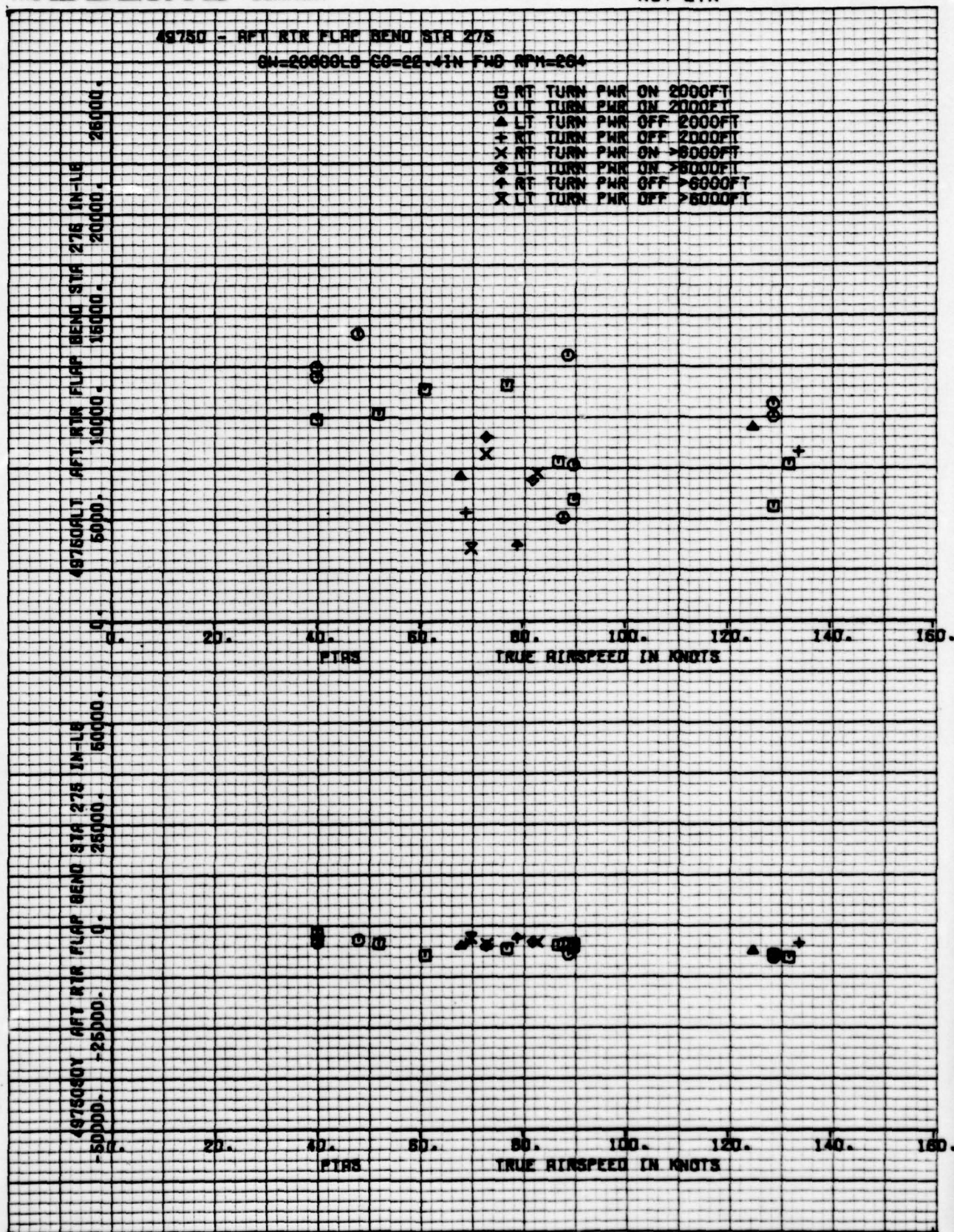


THE **BOEING** COMPANY

NUMBER **D210-11168-3**
REV LTR **VOLUME 4**



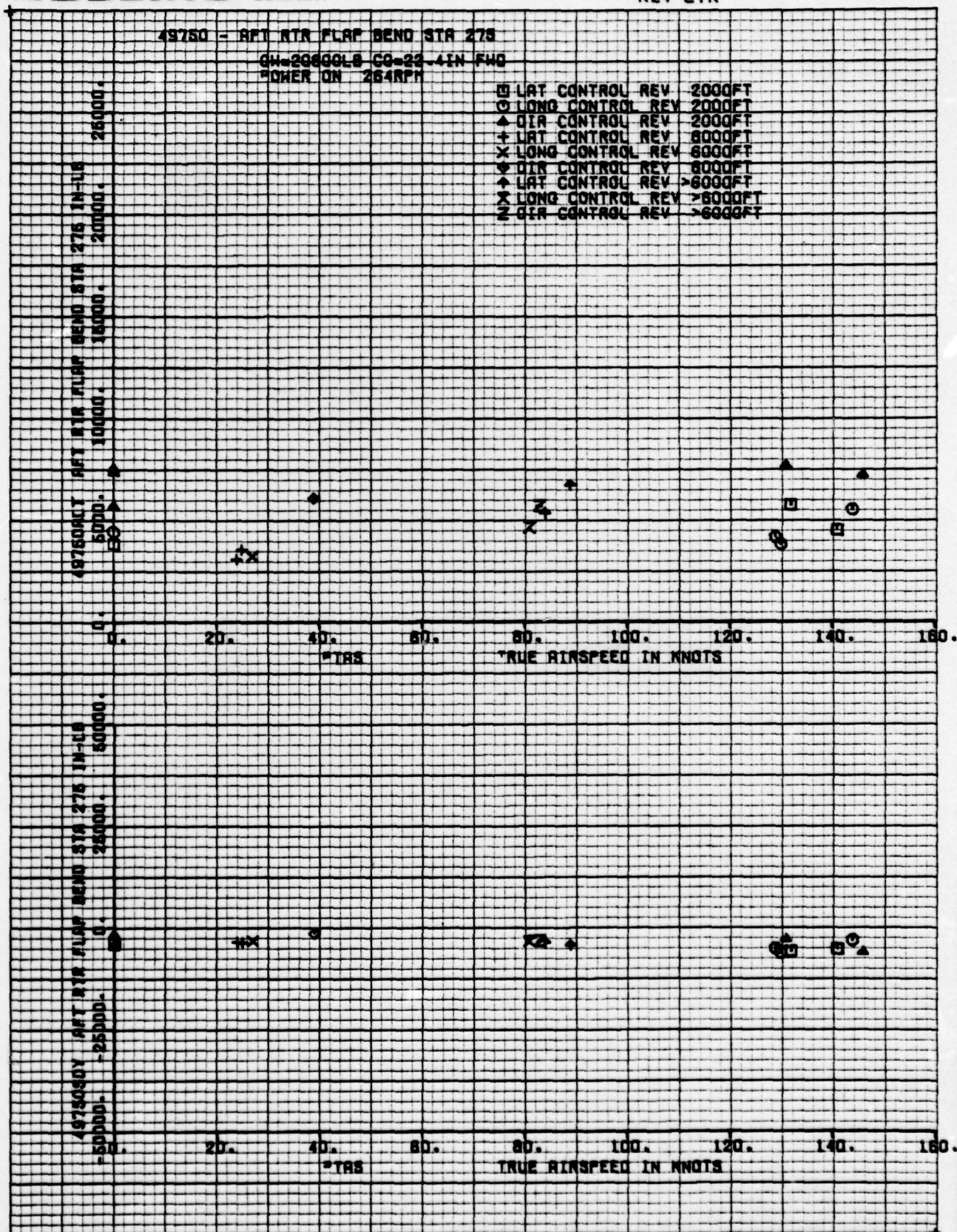


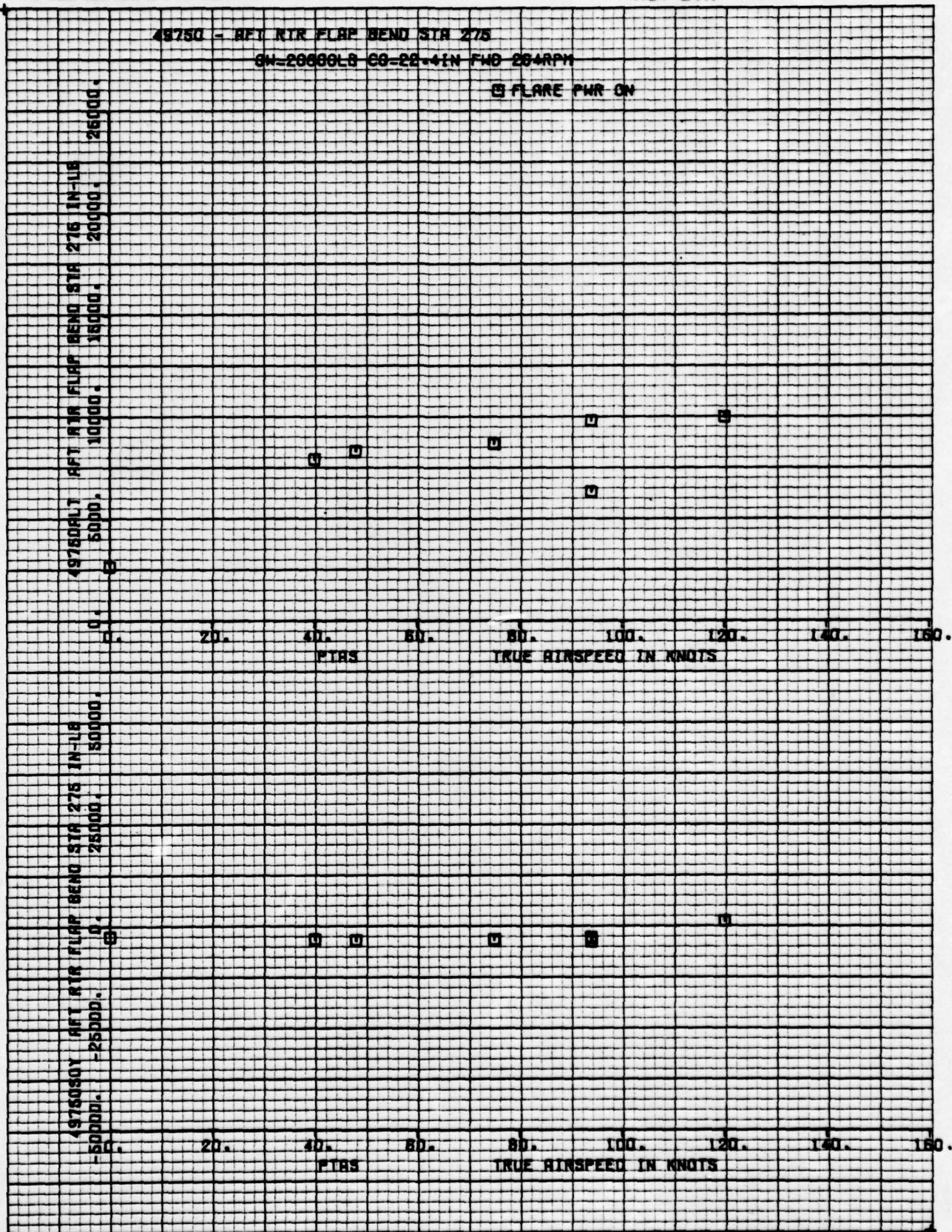


D210-11168-3

NUMBER
REV LTR

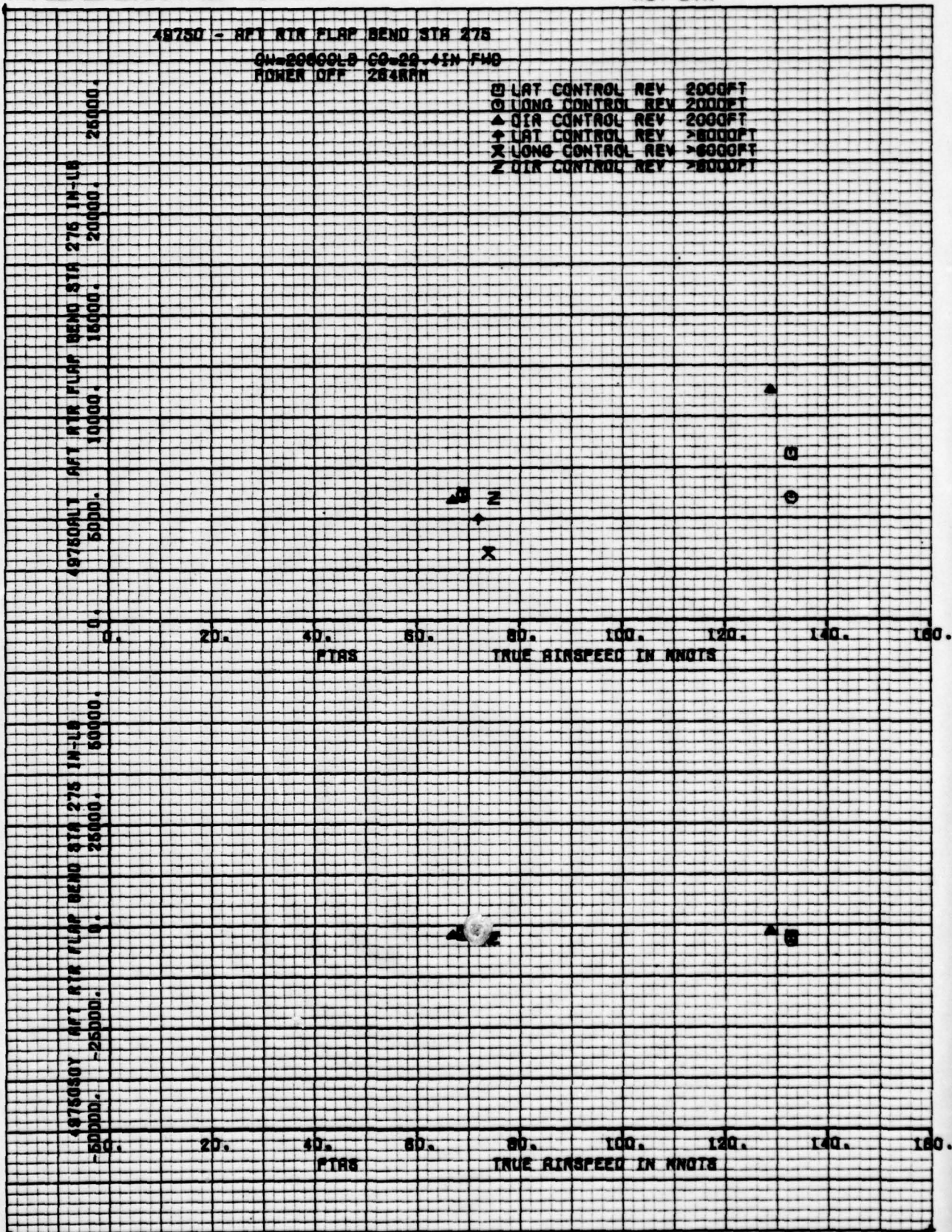
VOLUME 4

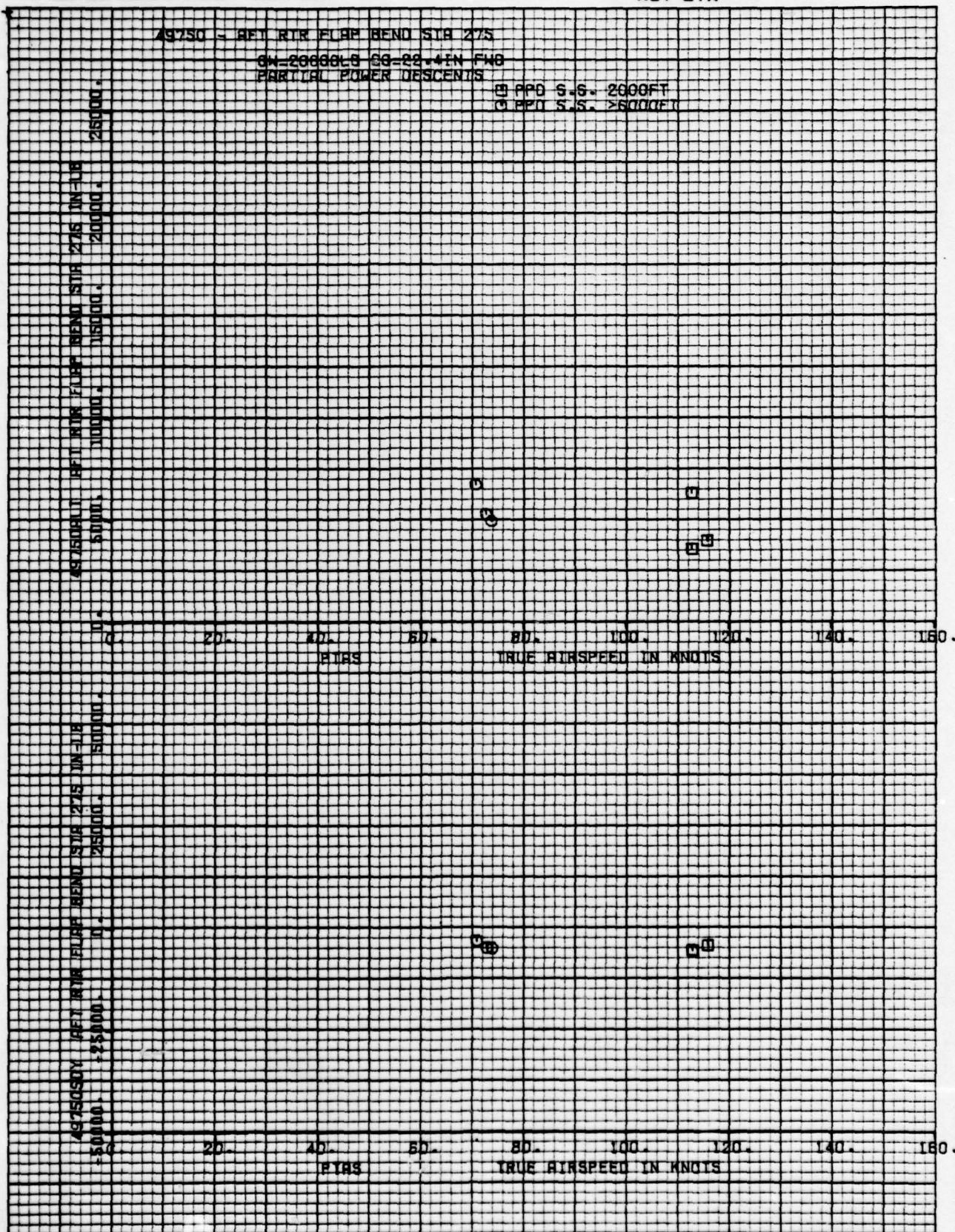




THE **BOEING** COMPANY

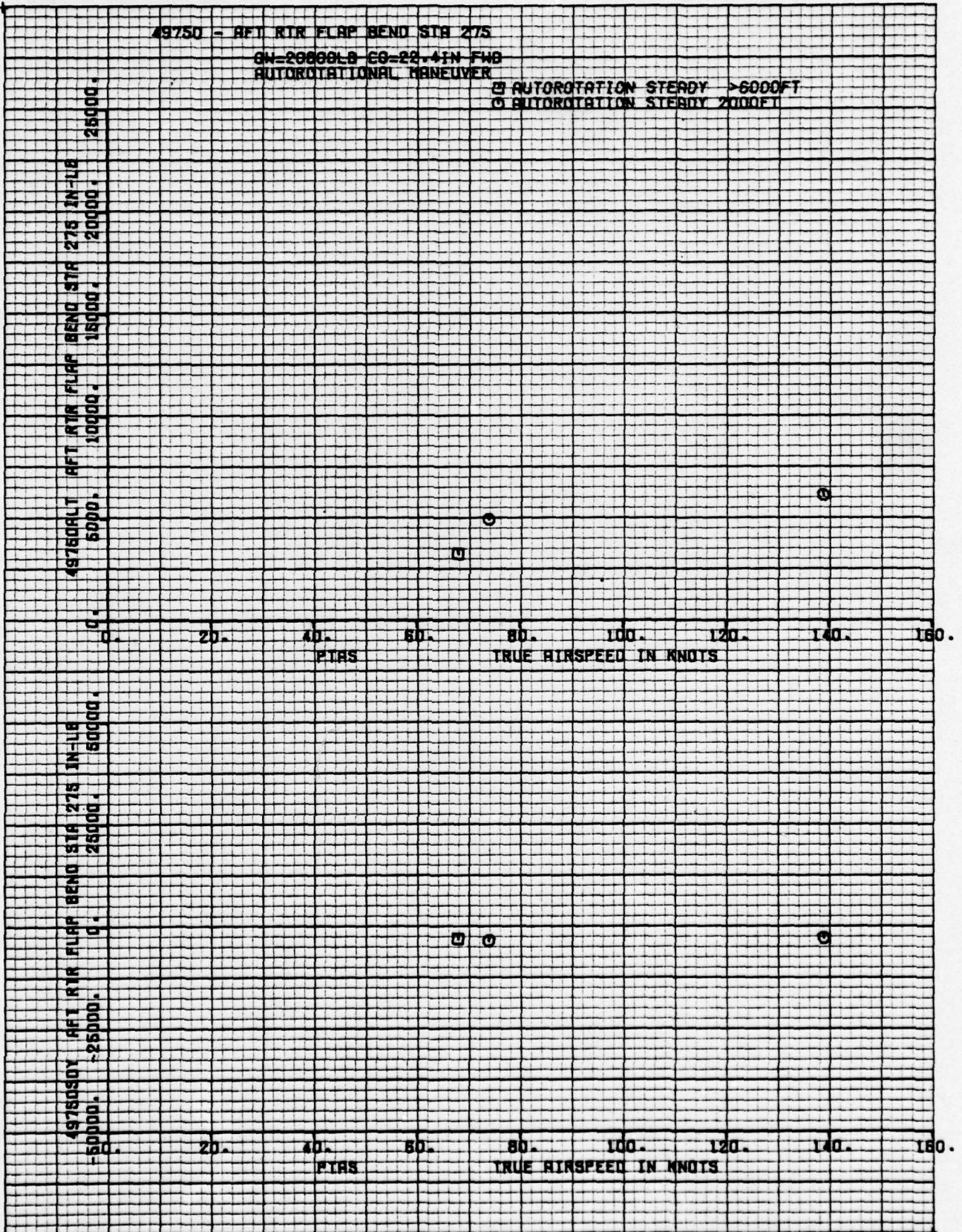
D210-11168-3
NUMBER VOLUME 4
REV LTR



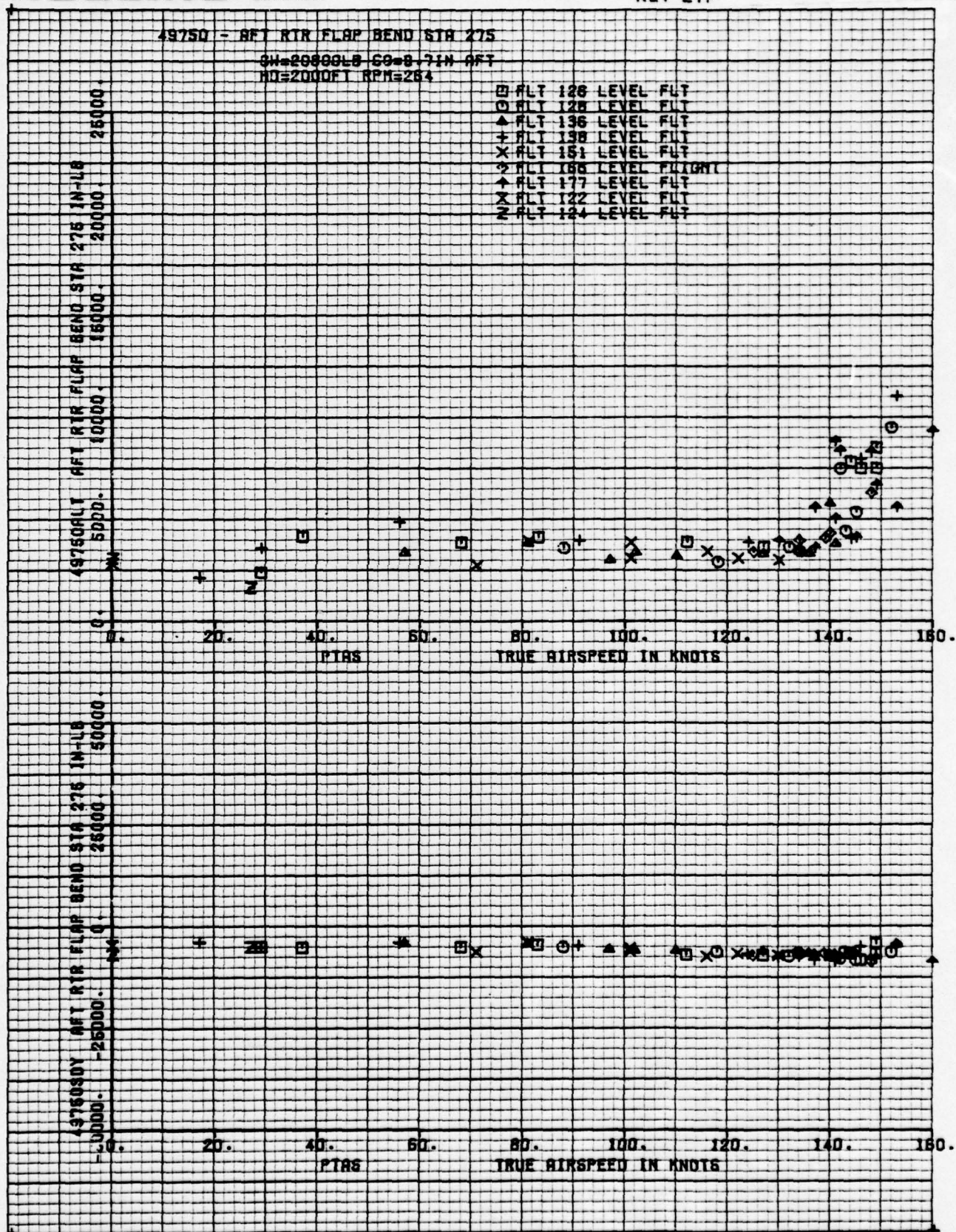


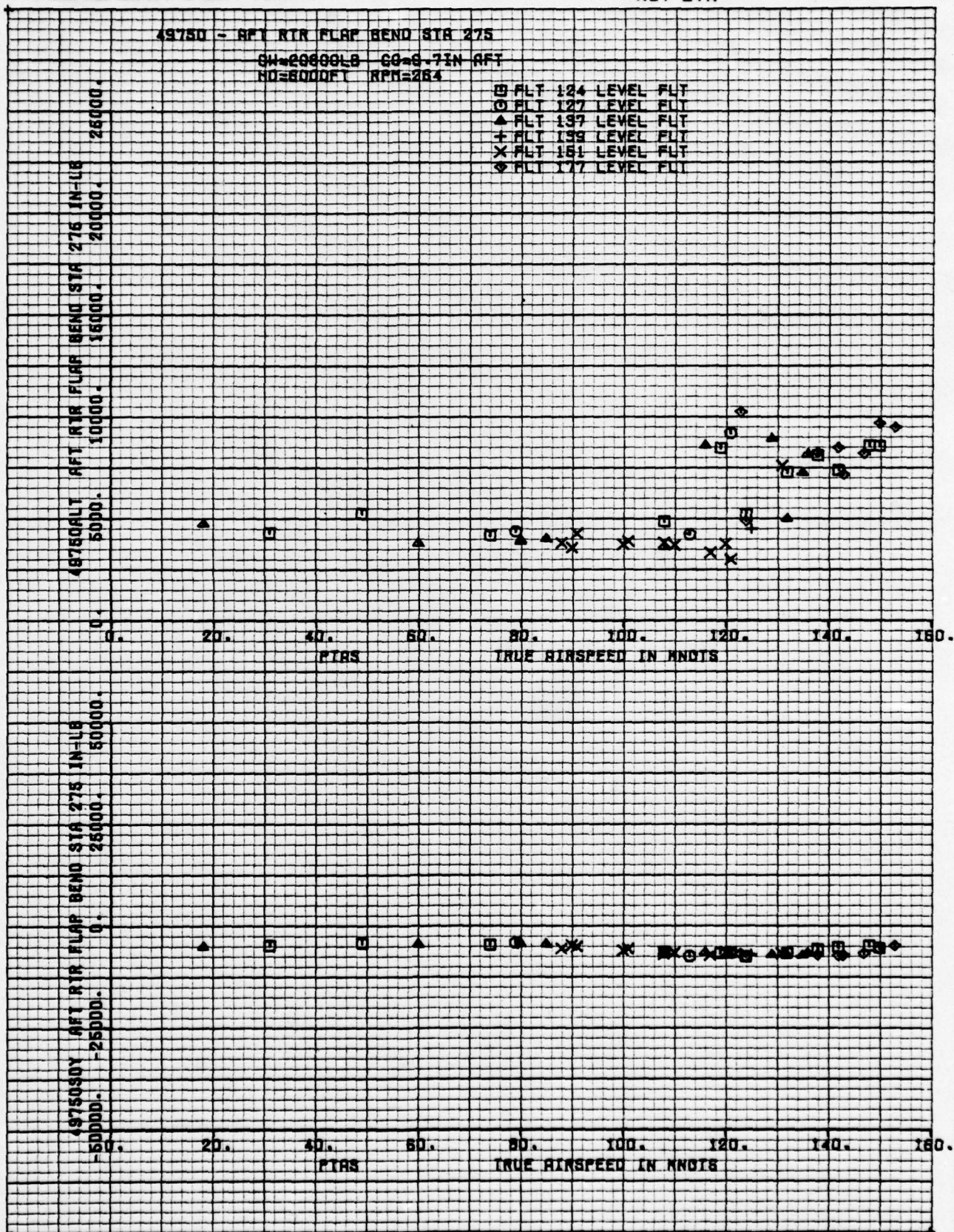
THE **BOEING** COMPANY

NUMBER **D210-11168-3**
REV LTR **VOLUME 4**



THE **BOEING** COMPANY



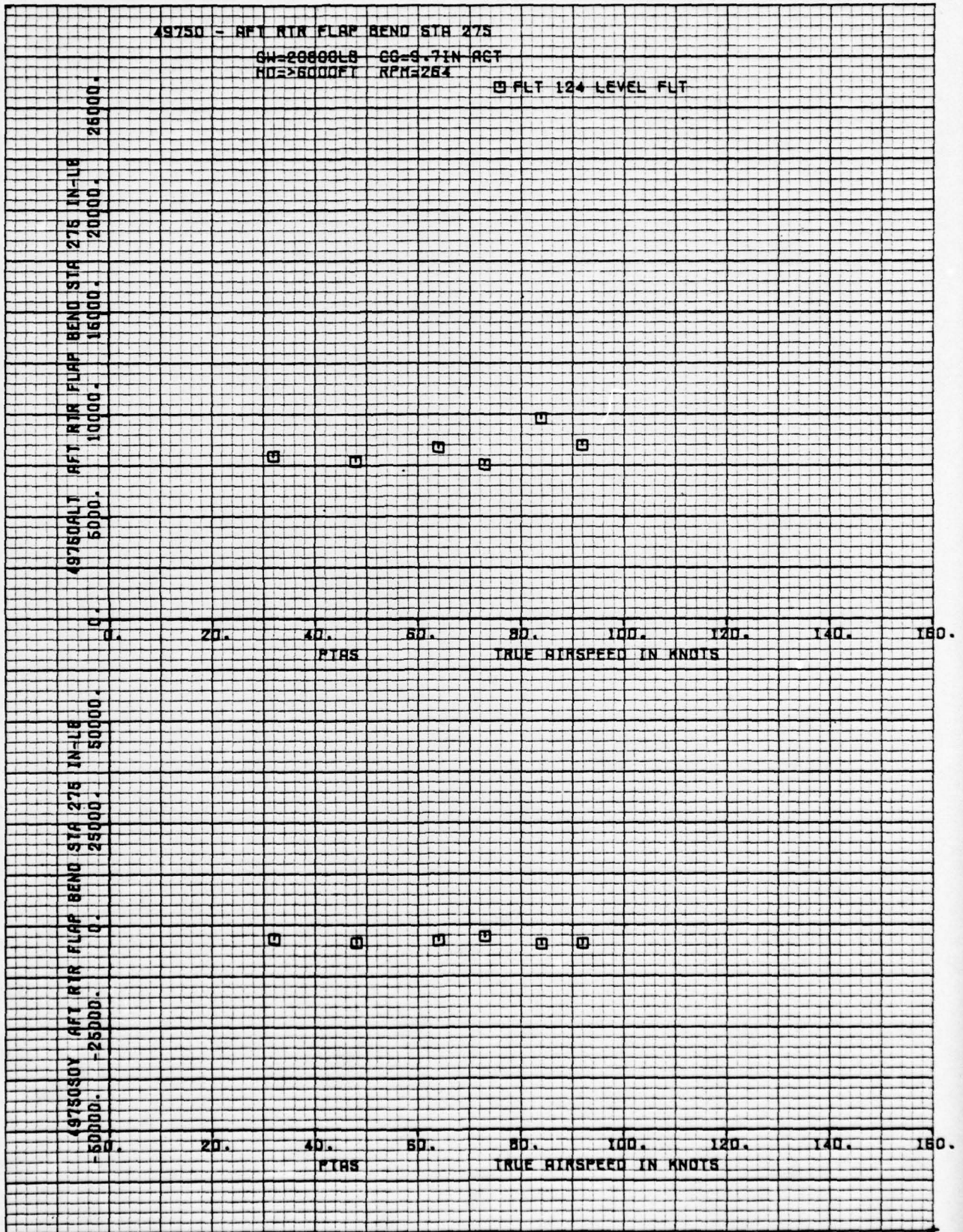


THE **BOEING** COMPANY

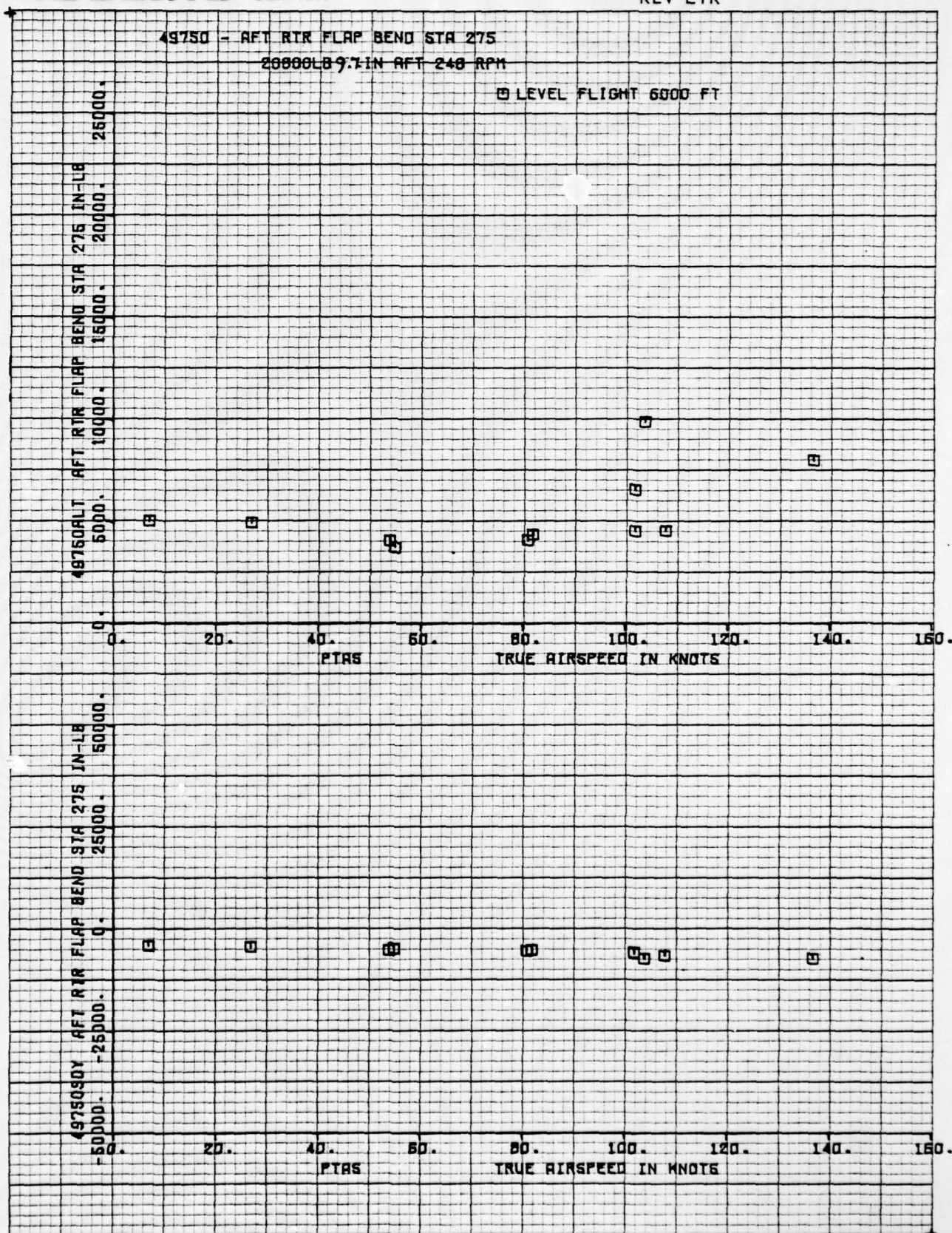
NUMBER
REV LTR

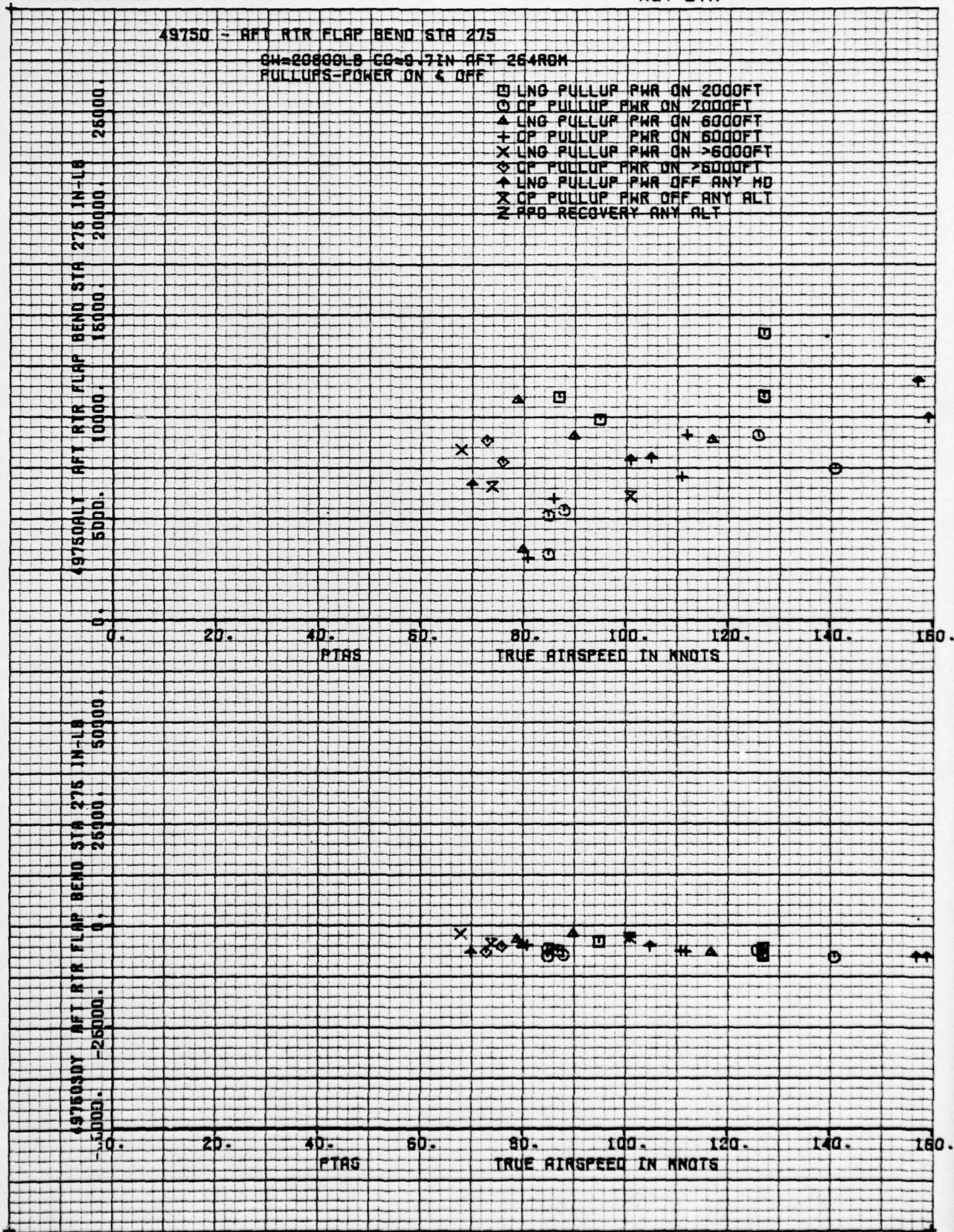
D210-11168-3

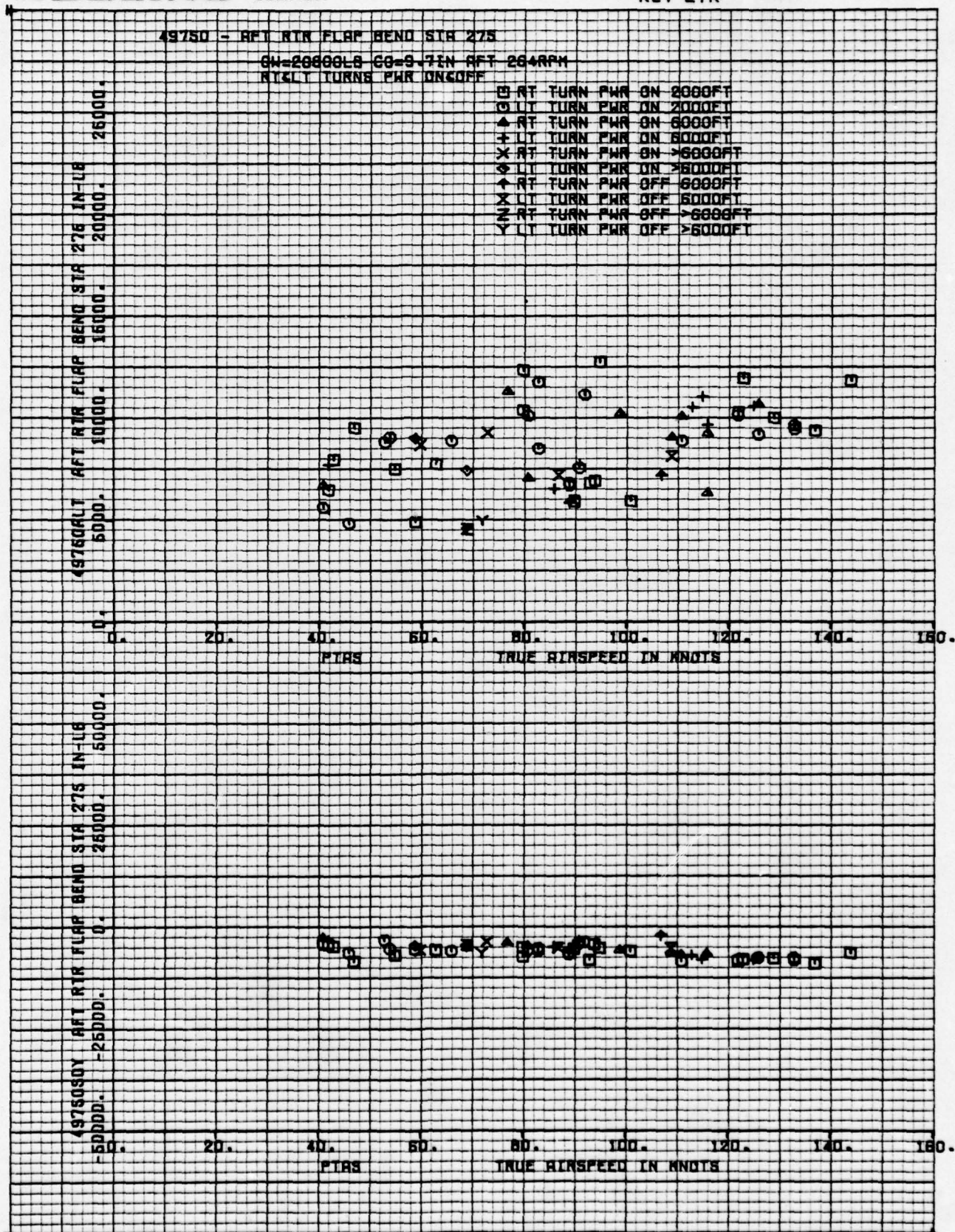
VOLUME 4

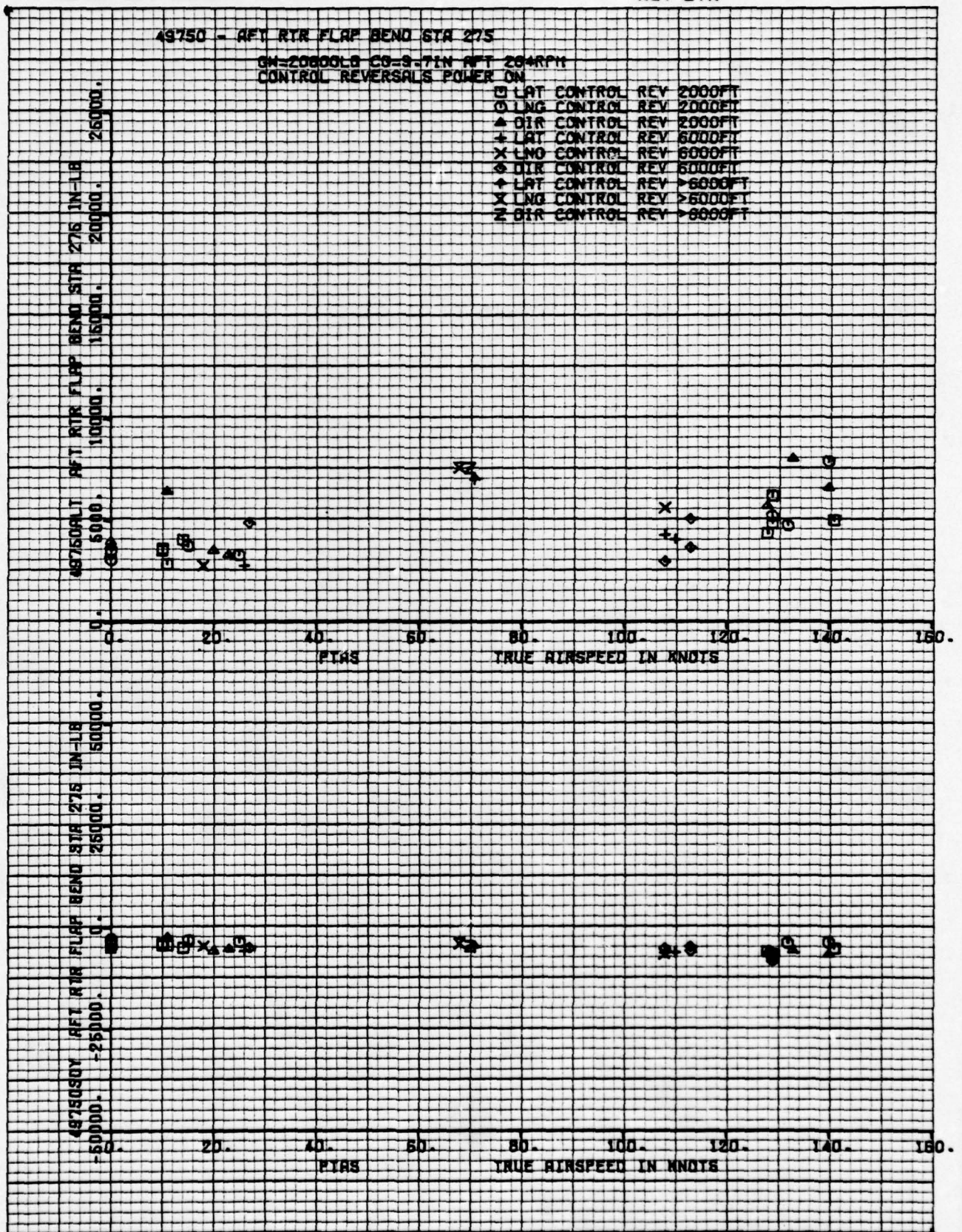


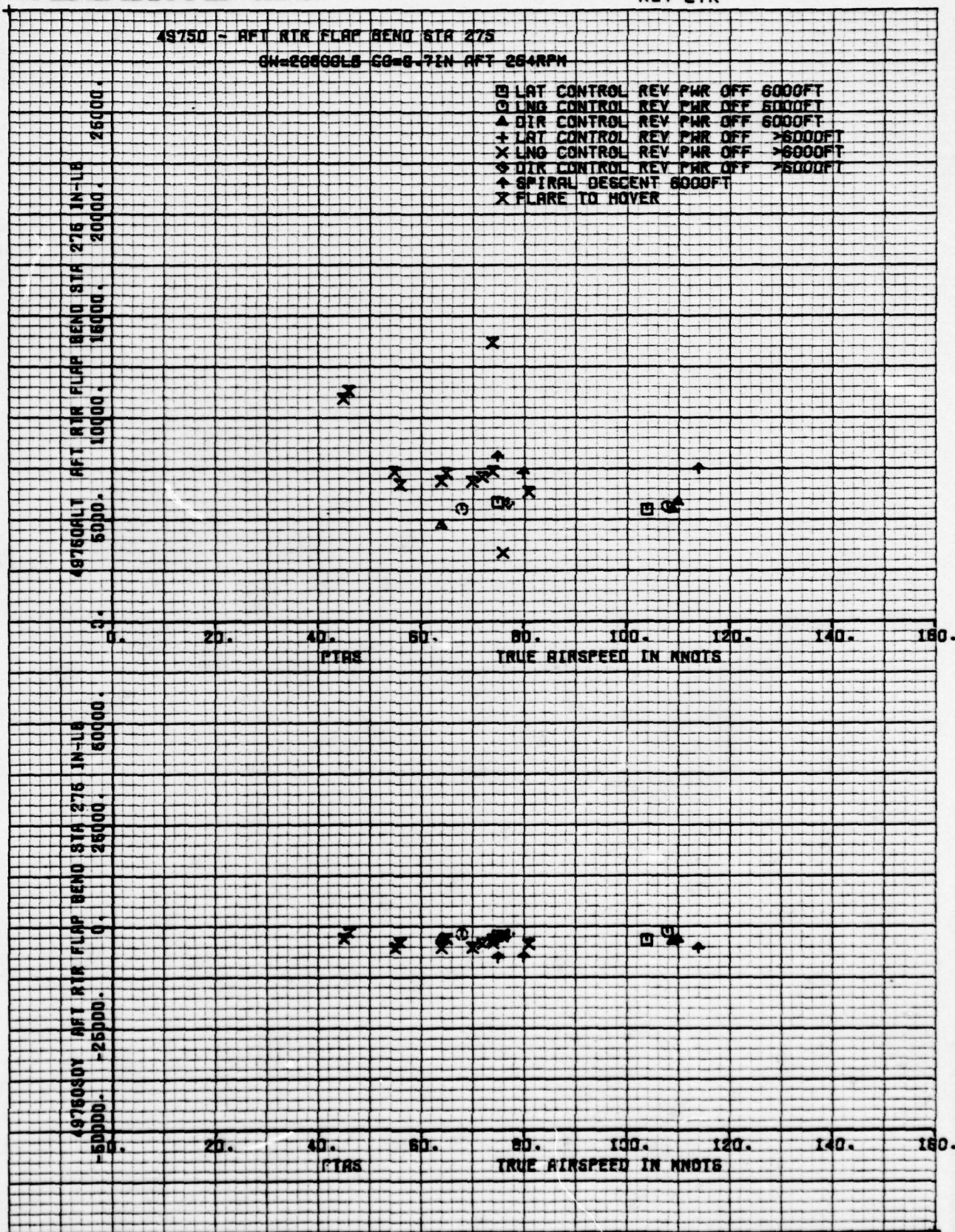
THE **BOEING** COMPANY





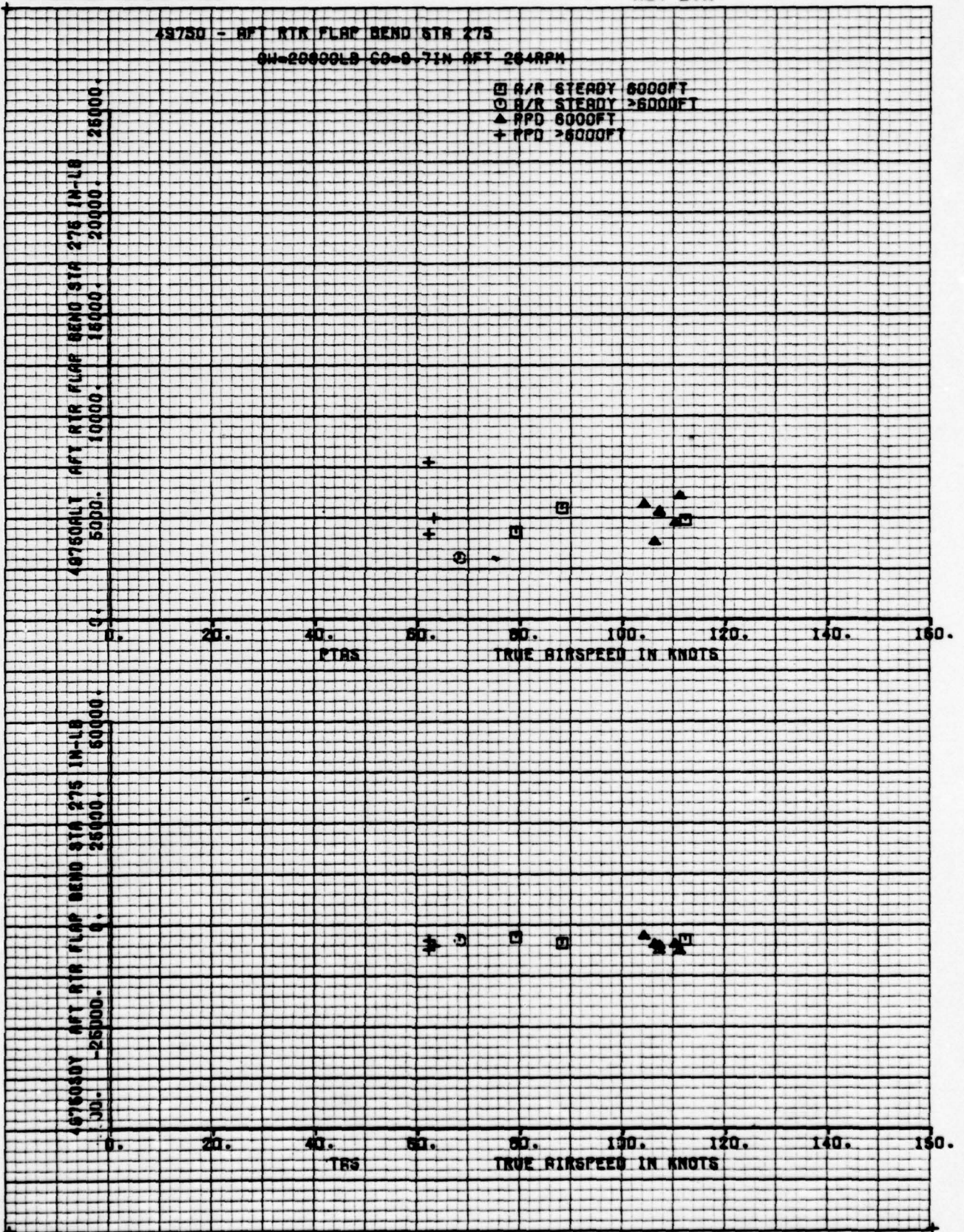






THE **BOEING** COMPANY

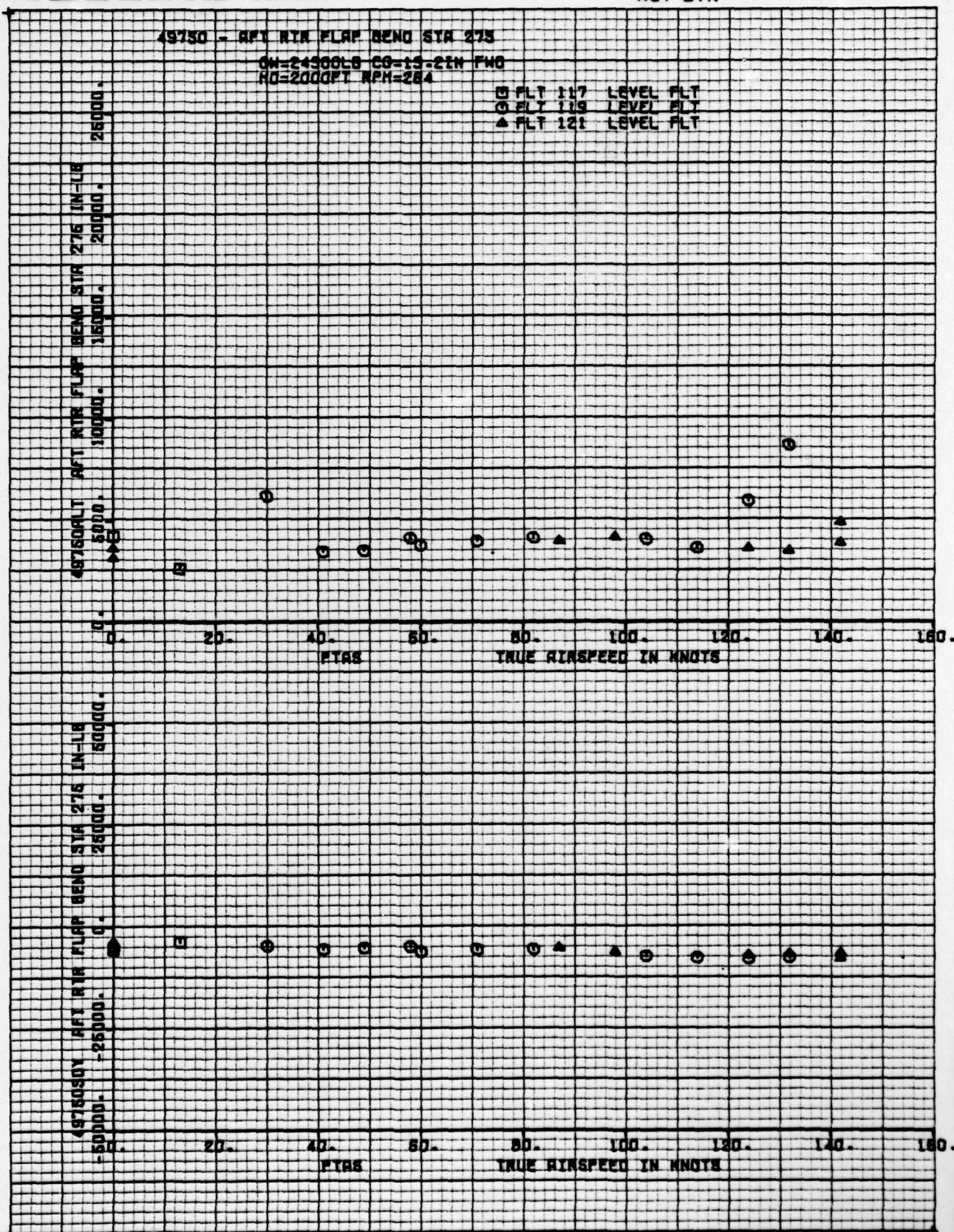
D210-11168-3
NUMBER : VOLUME 4
REV LTR



THE **BOEING** COMPANY

NUMBER
REV LTR

D210-11168-3
VOLUME 4



FORM 52300 (10/71)

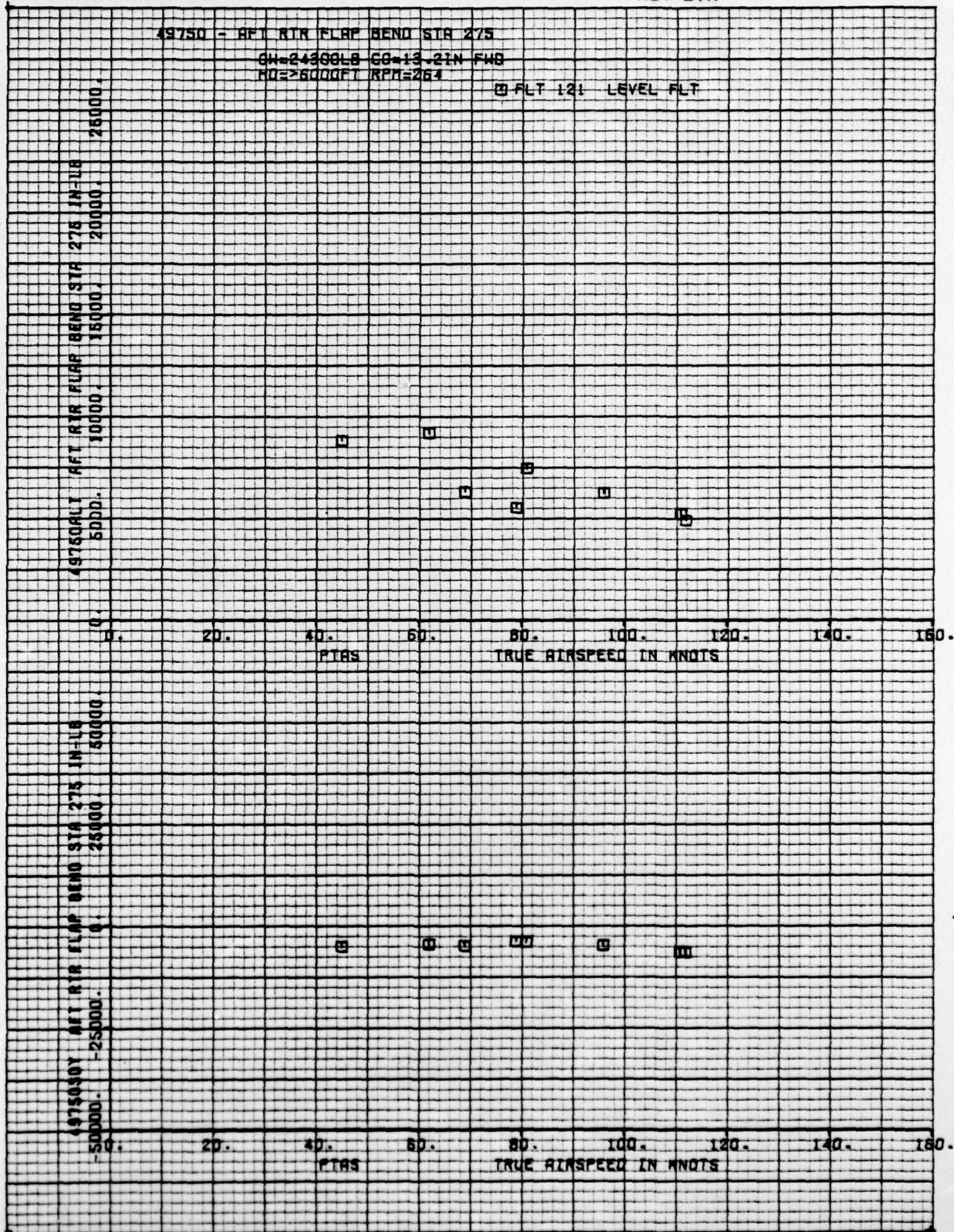
SHEET 319

-6

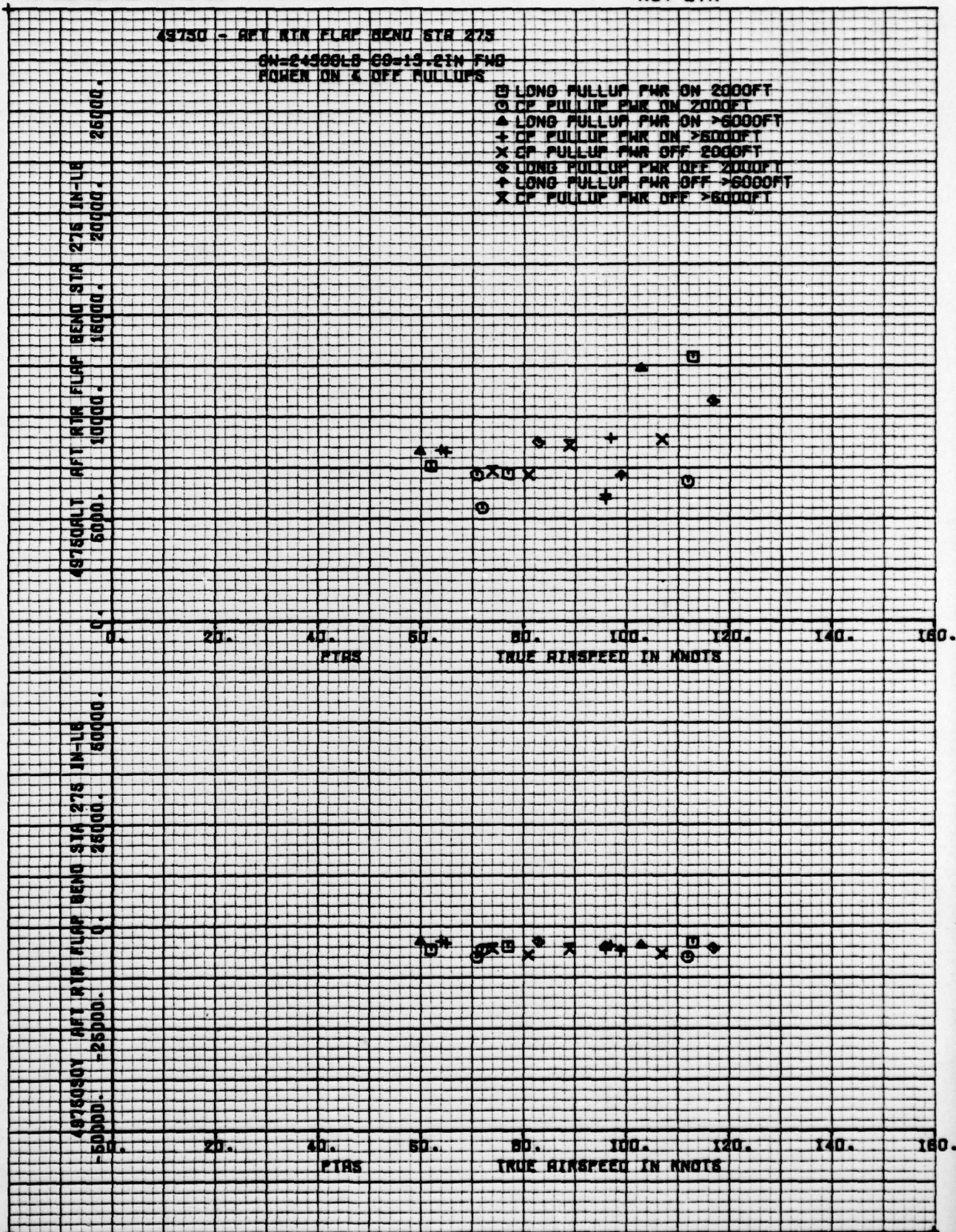
THE **BOEING** COMPANY

NUMBER
REV LTR

D210-11168-3
VOLUME 4

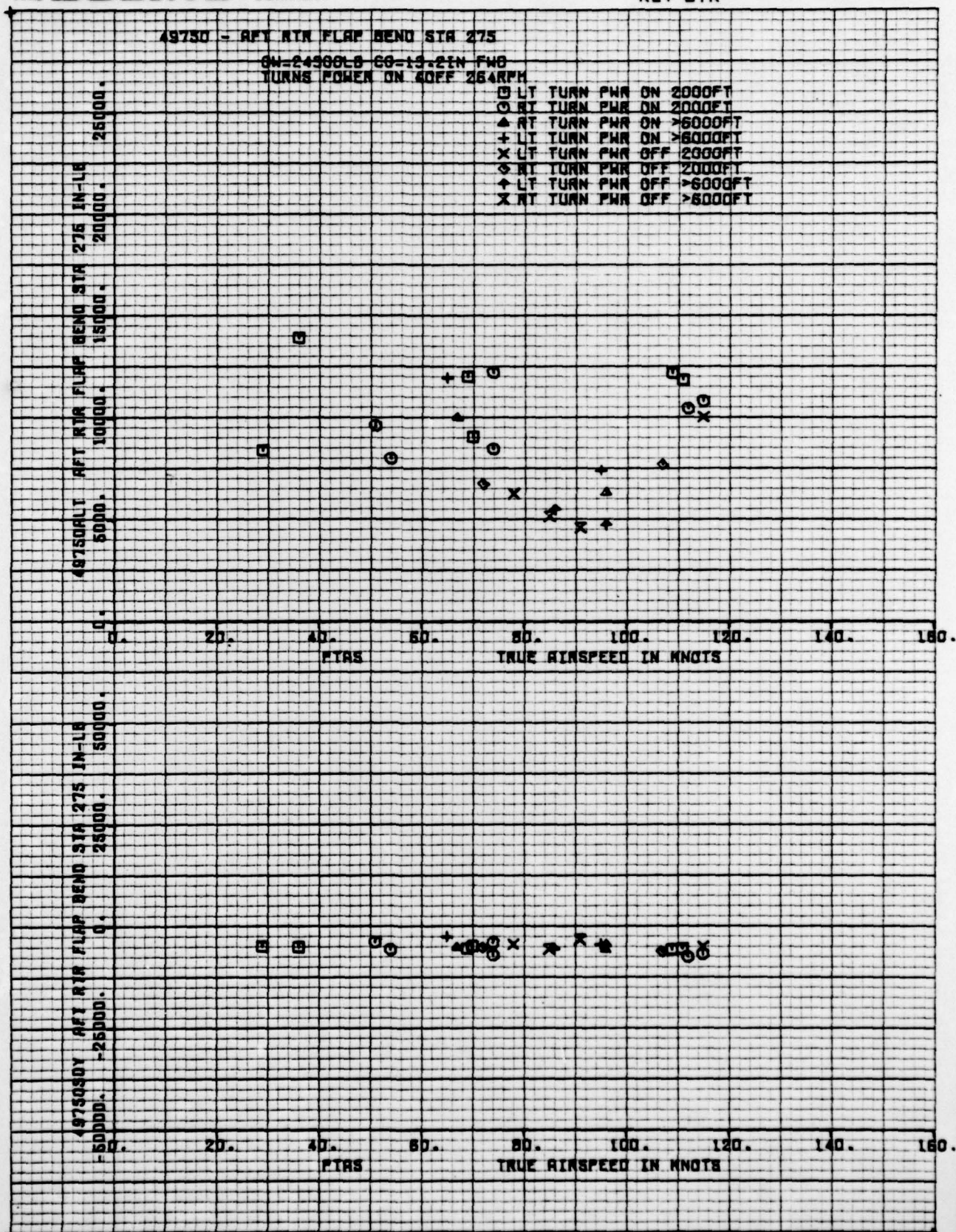


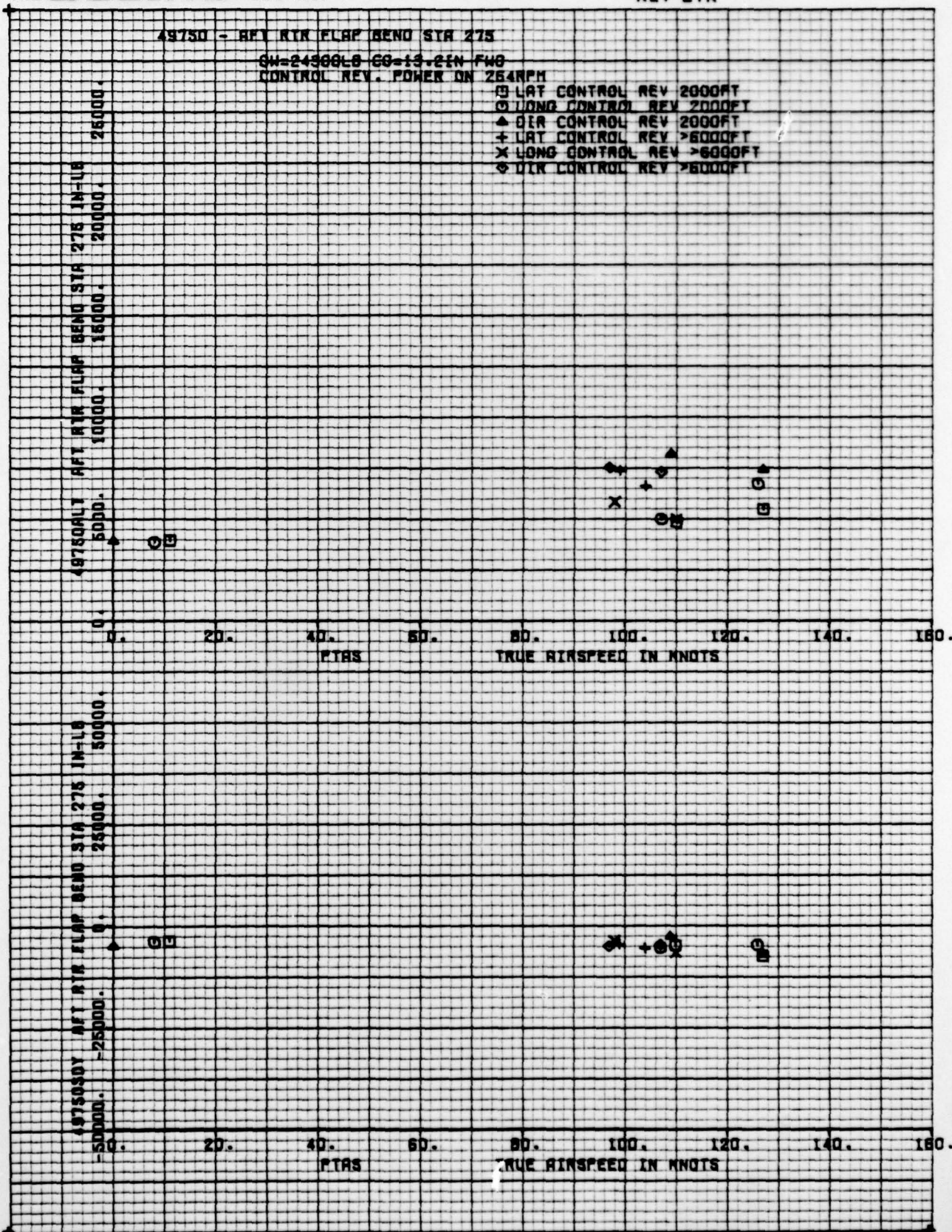
FORM 92300 (10/71)

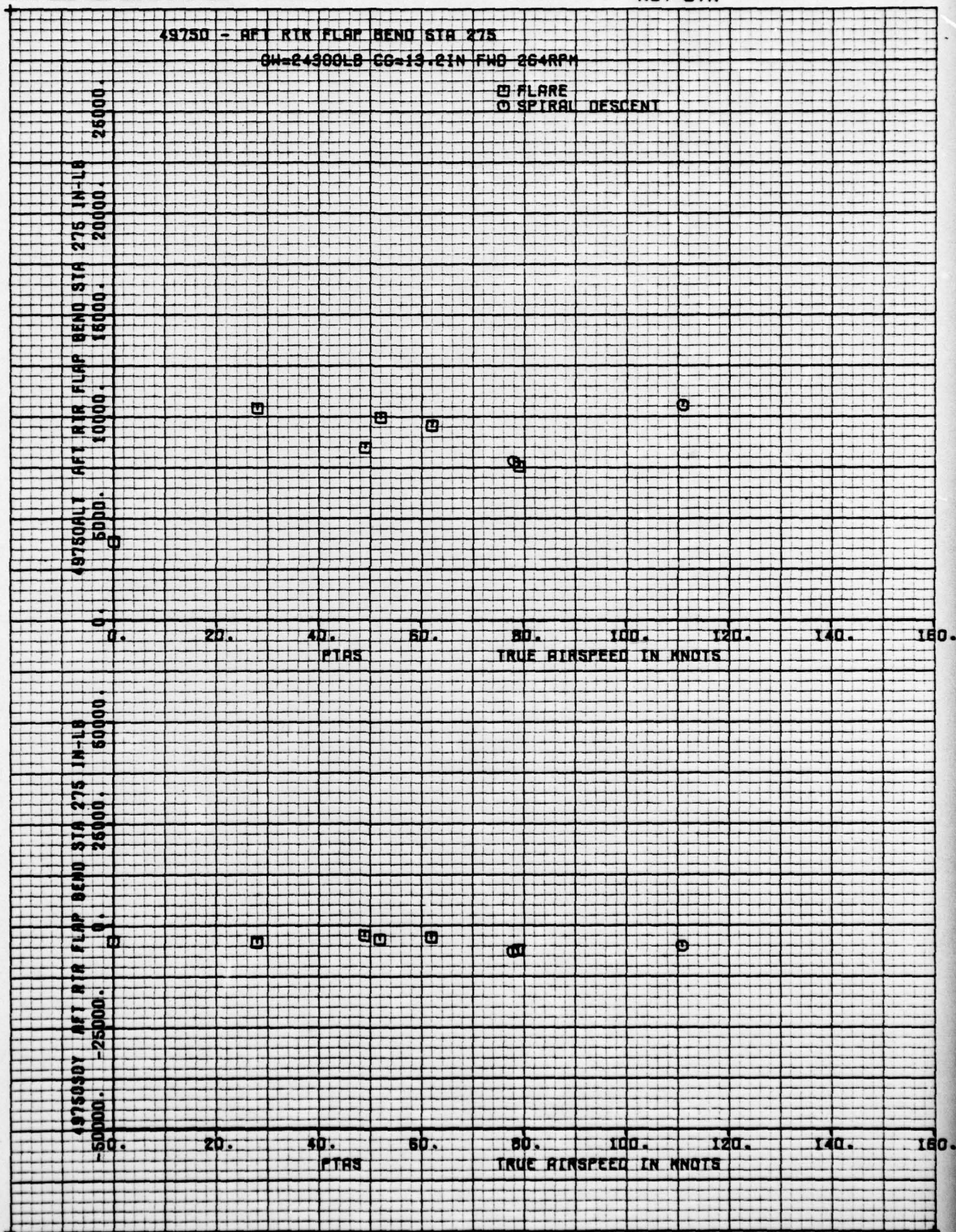


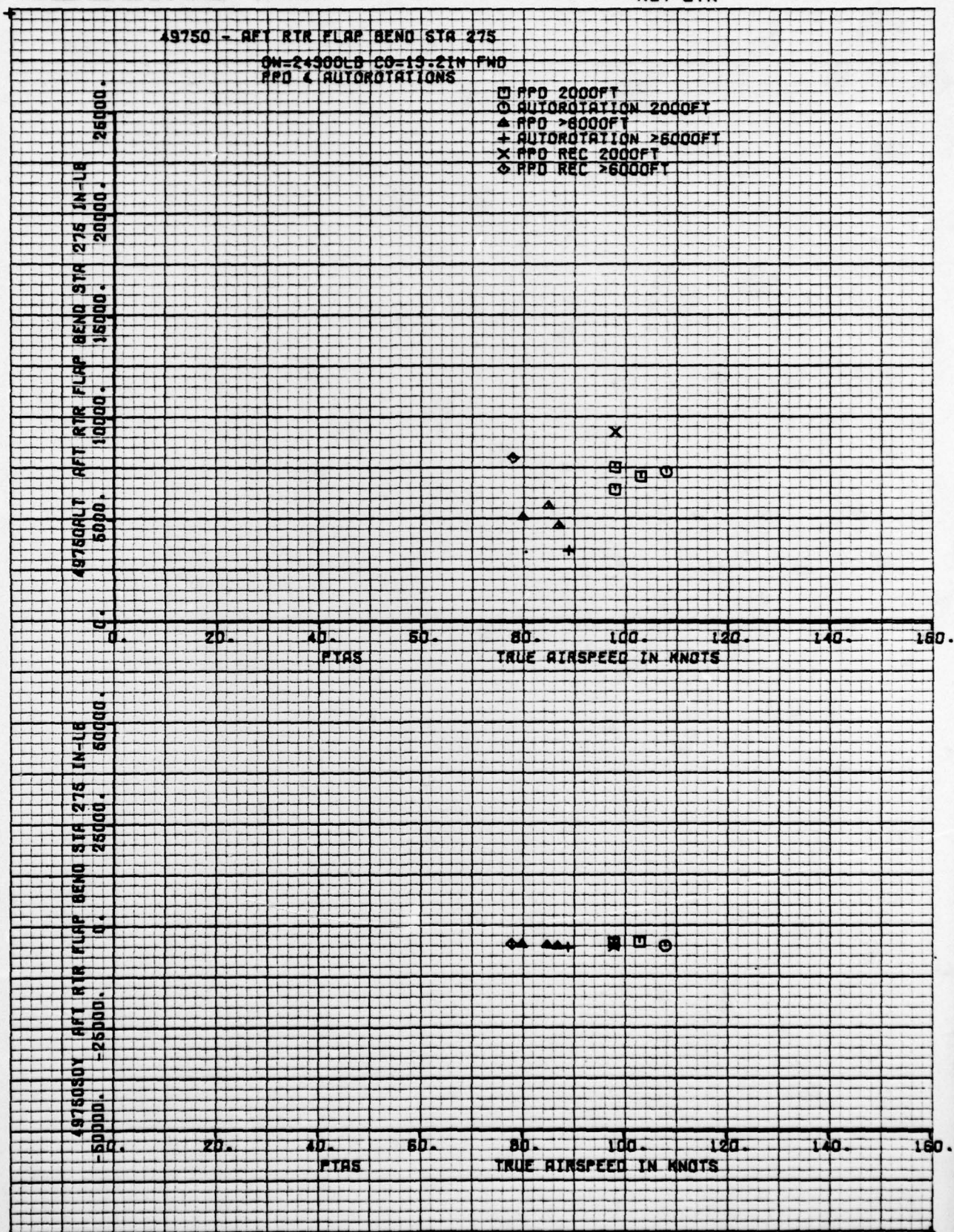
THE **BOEING** COMPANY

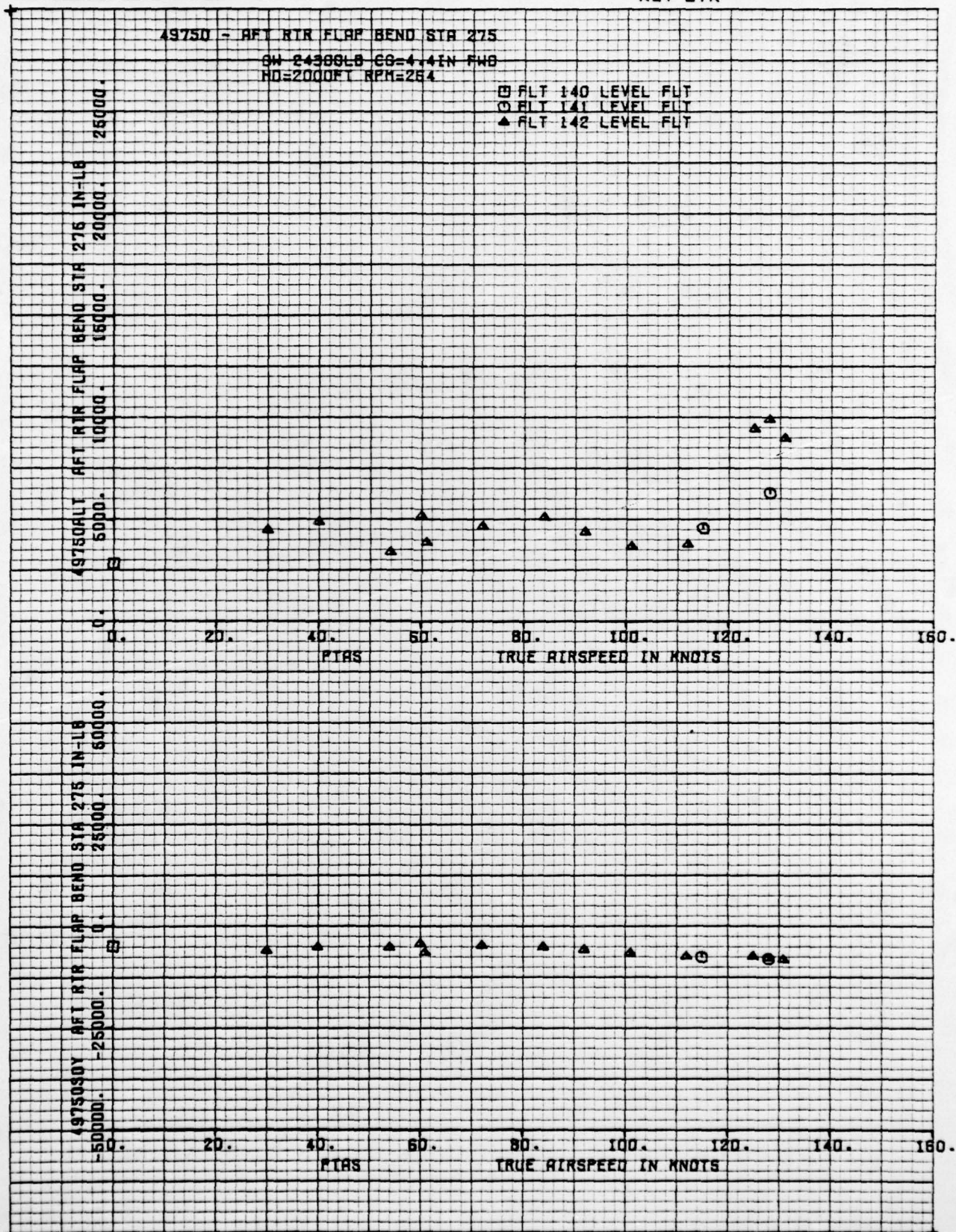
D210-11168-3
NUMBER: VOLUME 4
REV LTR

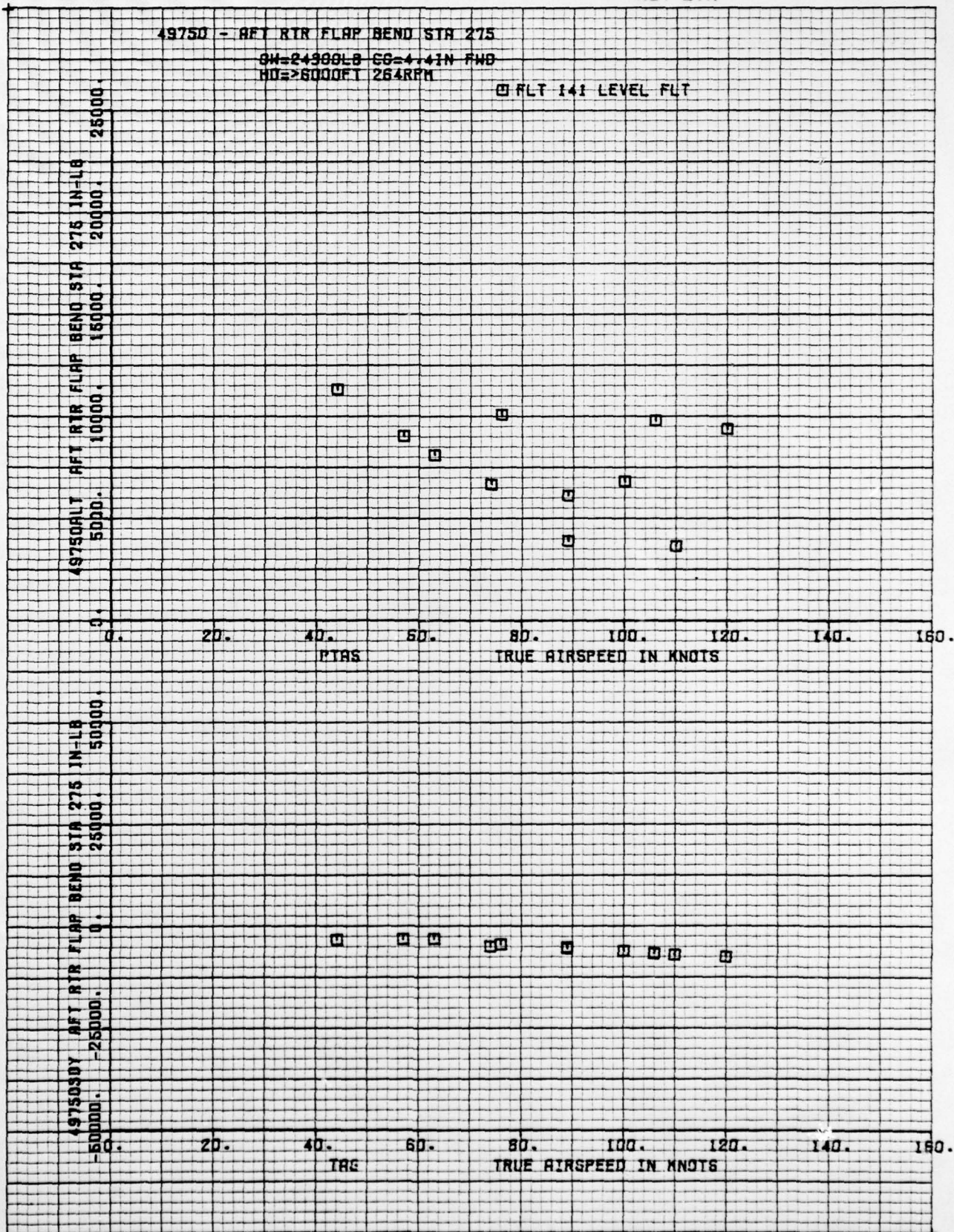


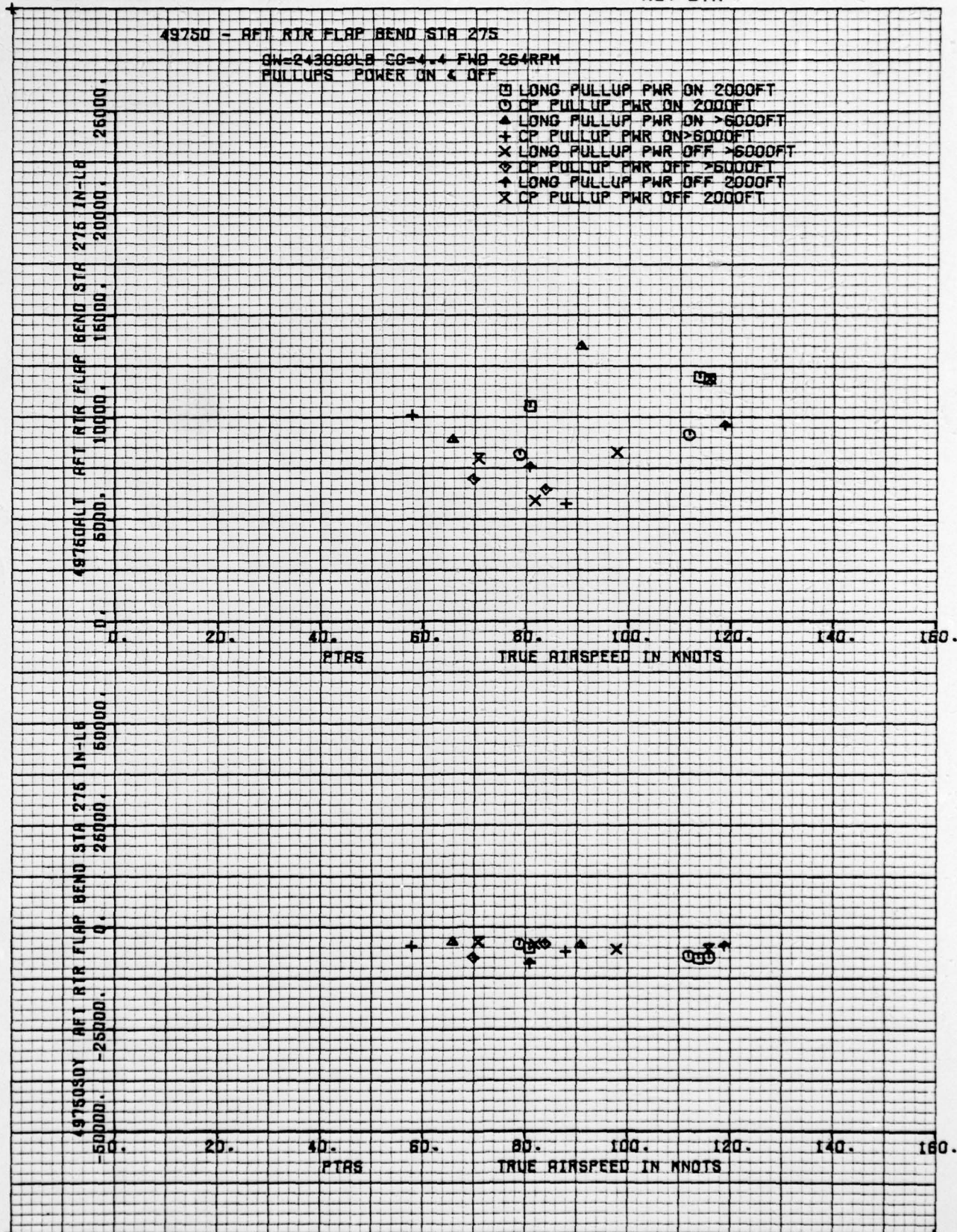






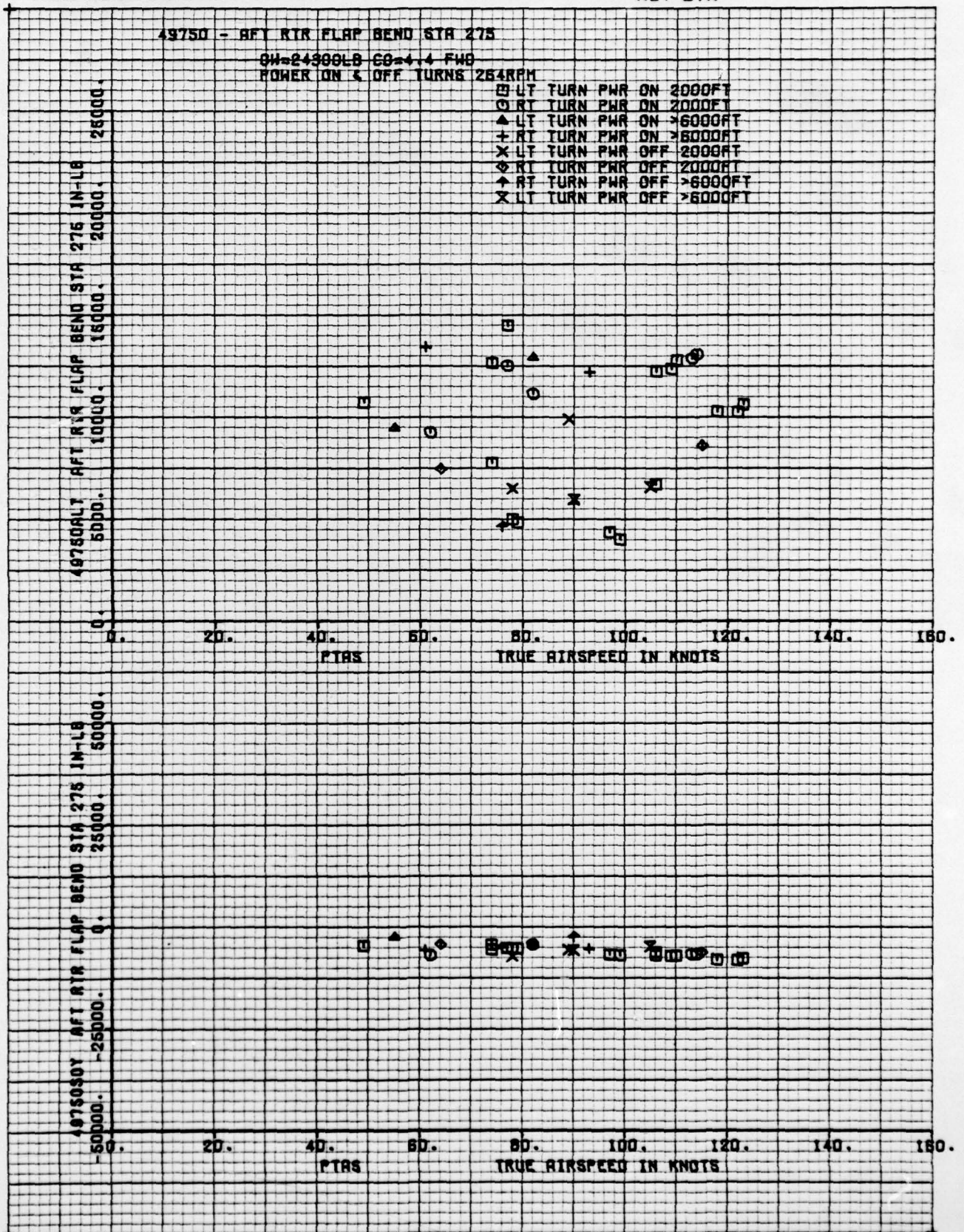






THE **BOEING** COMPANY

D210-11168-3
NUMBER
REV LTR
VOLUME 4



VOLUME 4

49750 - AFT RTR FLAP BEND STA 275

GN-24368LB GS-4.4IN FWS
POWER ON CONTROL REVERSALS

□ LAT CONT REV 2000FT
○ LONG CONT REV 2000FT
▲ DIR CONT REV 2000FT
+ LAT CONT REV >6000FT
X LONG CONT REV >6000FT
◇ DIR CONT REV >6000FT

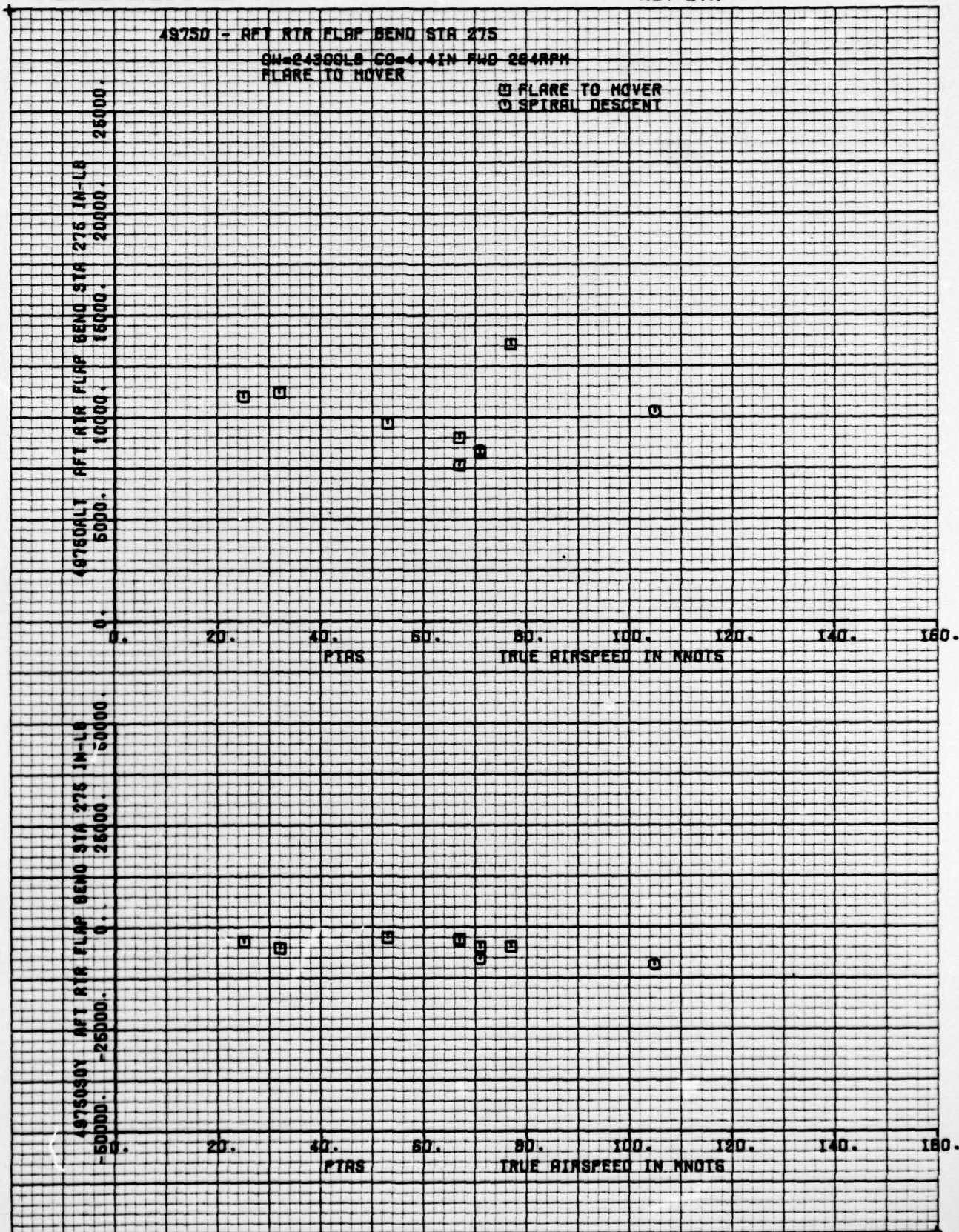
49760ALT AFT RTR FLAP BEND STA 275 IN-LB
0. 5000. 10000. 16000. 20000. 26000.

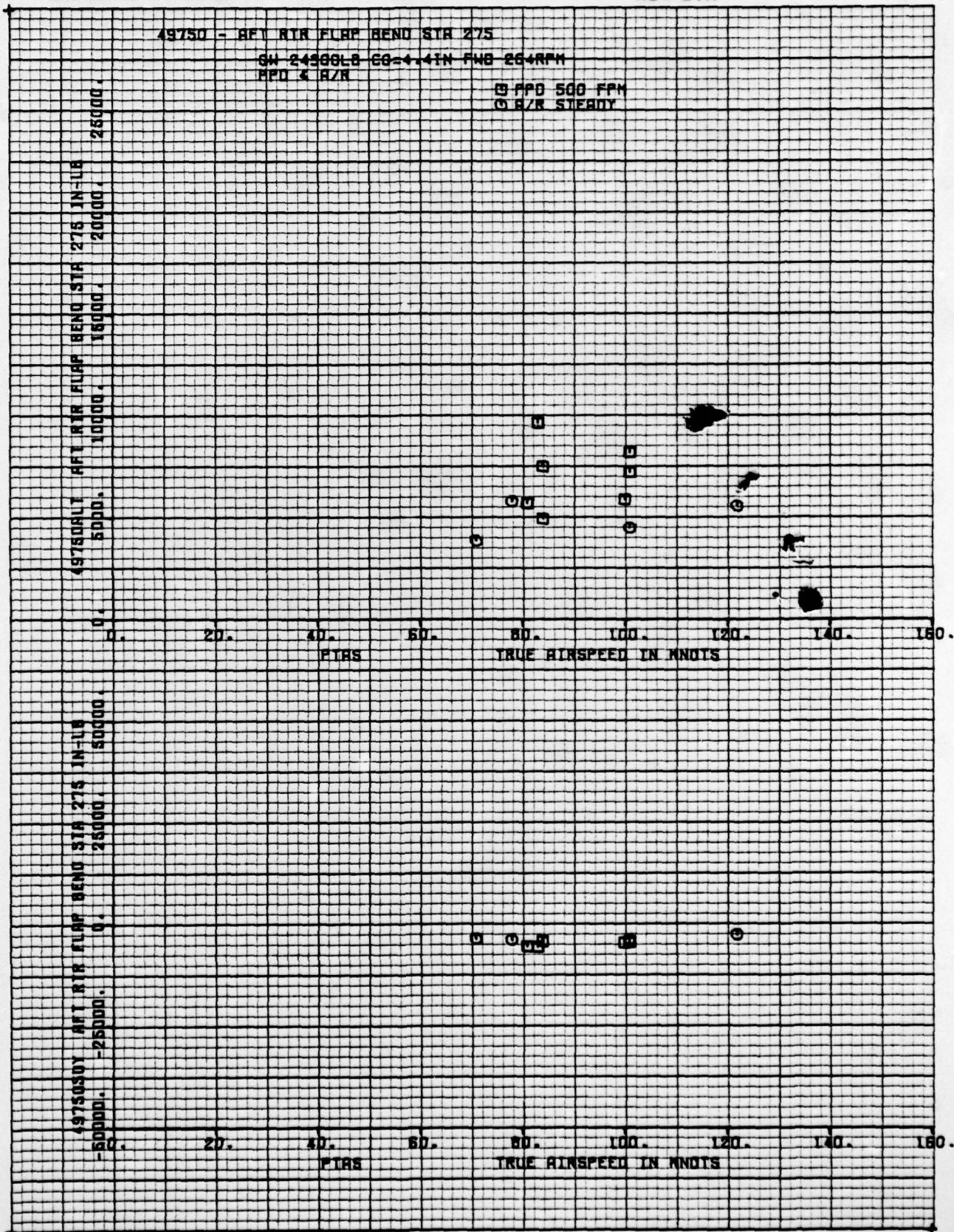
0. 20. 40. 60. 80. 100. 120. 140. 160.
KTAS TRUE AIRSPEED IN KNOTS

49760SOY AFT RTR FLAP BEND STA 275 IN-LB
-50000. -25000. 0. 25000. 50000.

0. 20. 40. 60. 80. 100. 120. 140. 160.
KTAS TRUE AIRSPEED IN KNOTS

THE **BOEING** COMPANY





THE **BOEING** COMPANY

NUMBER
REV LTR

D210-11168-3
VOLUME 4

